

BUILT SPACE

by
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June 1984

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Submitted to the Department of Architecture on May 11, 1984 in partial fulfillment of the requirements for the Degree of Master of Architecture

ABSTRACT

This thesis explores the spatial qualities of built environments through observation and design. Recognition that we move through our environment should be reflected in the space we design. Where applicable, a series of sequential sketches are used to observe/design the spatial variety of places that are to be moved through. Three-dimensional sketches are emphasized in conjunction with plans and sections as a way to become more aware of the spatial characteristics of places.

A way of building is advocated that increases spatial variety and provides an understanding of individual building parts. Any three-dimensional form will articulate and influence the space surrounding it. By aggregating (not connecting) forms, the space between them is built as a positive element.

This building method is applicable in both the natural and built environments. Frank Lloyd Wright's Fallingwater is observed/analyzed as a built response to the natural landscape. In this context, spatial characteristics of settings in a range of sizes are analyzed. Two sketch problems follow that are on an urban site: the spatial transition into a public theater and a column/trellis detail.

The intent of the observation/design is to illustrate that the opportunity to enrich the spatial quality of the built environment is not limited in size, use, or context.

Thesis Supervisor: Shun Kanda

Title: Lecturer

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The reality of building consists
not in the walls and roof but in
the space within to be lived in.

LAO TZU

Introduction: Built Space

Man lives in an ongoing dynamic world - a world that is relative and never absolute. This world is continuously evolving - the climate changes, cultures change, the seasons come and go.

Because man moves within this continuous world, our experiences are relative also. We experience places in relationship to where we've been and where we anticipate going. Here is always experienced in relationship to there. As architects, we can design places to support and enhance this experience by understanding the built world as part of the

continuous dynamic environment.

Two issues are elemental to this approach. First, the built and unbuilt worlds are understood in relationship to each other. All three dimensional forms will influence and affect the surrounding space. This reciprocal relationship of space and material can be a positive influence on our experience of the environment. The second issue addresses our movement through the environment. By recognizing movement as an influence on design, we can build spatial differences to enrich the experience of moving through the built world.

The focus of this thesis is

the spatial characteristics of places, how these places/spaces are built, and how these three-dimensional characteristics enrich our experience of the environment. Through observation and design, the study illustrates the opportunity to think spatially, whether the context is the corner detail of a chair or the corner of an urban plaza.

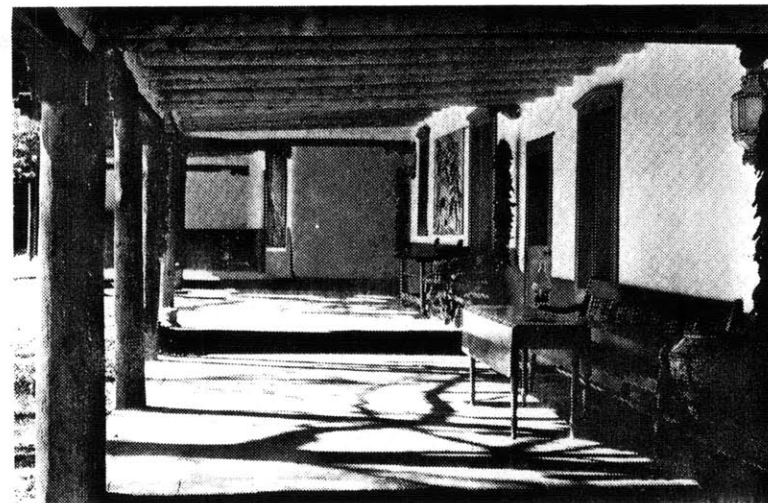
The theme of the thesis is that spatial variety is an important influence on the quality and understanding of the built environment. The following outline illustrates several ways of building which address spatial concerns.



FIELD ORGANIZATIONS

Fields consists of objects (places) that are spatially connected. The space is continuous and acts as the "glue" that binds the objects together.

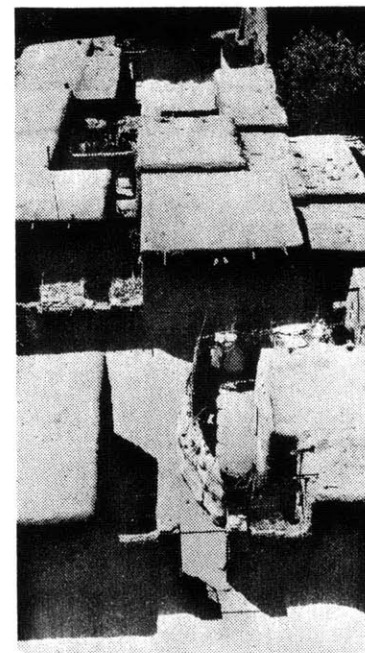
The importance of a field organization is that it consists of both space and material. Each can be identified individually, yet is dependent on the other for its formal definition or shape.



SPACE/MATERIAL RECIPROCITY

Under certain conditions, it is advantageous to blur the standard figure/ground relationship between space and material. Each takes on and shares characteristics of the other.

This reciprocal relationship defines an in-between zone which has characteristics of each adjacent element. This zone can provide a variety of spatial relationships.

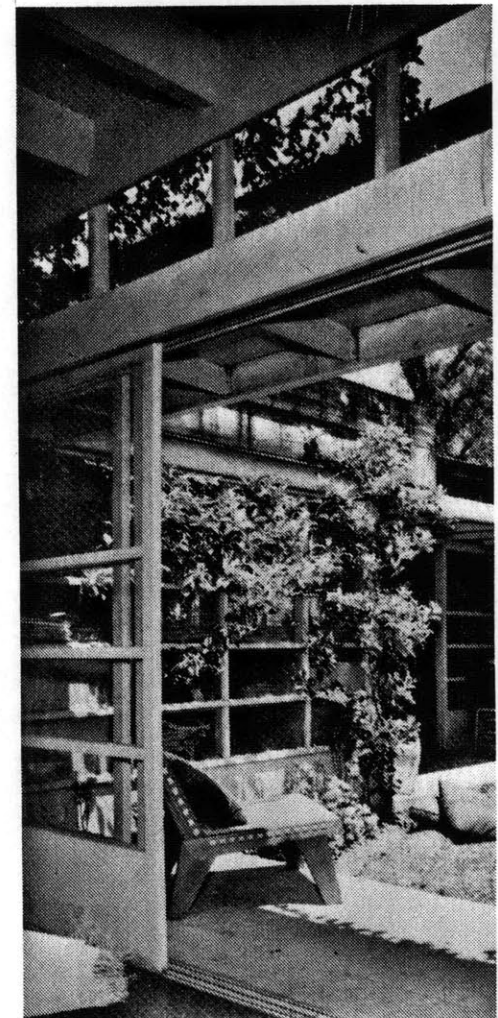




BUILDING SPACE INTO THE FORM

The discussion of reciprocity addressed the zone between space and material - this example actually builds or captures space in the form (material).

The combination of space/light and material provides the dual quality of enclosure and exposure.





ALWAYS ANOTHER SPACE

Places are defined in
relationship to other places.
Here is relative to there.

The quality of spaciousness
can be built into a place if some
of the space continues on and its
limits are out of view.



INTENTIONS

It is important and possible to express a concern for the spatial qualities of the built environment at any scale and in any context.

Two dissimilar spatial contexts are observed/designed to illustrate a range of built responses.

OPEN NATURAL LANDSCAPES... Fallingwater, Bear Run, Pennsylvania,
Frank Lloyd Wright...Architect.

CONTAINED URBAN LANDSCAPE..A Design Proposal for Dock Square,
Boston, Massachusetts

A method of observation and design is explored to increase our awareness of the spatial qualities of places.

Three-dimensional sketches are used to analyze Fallingwater for two purposes. First, they illustrate only the spatial issues which concern this study. Also, a way of observing is developed that can then be applied to the design process. Perspective vignettes are emphasized for their ability to capture the spatial quality of places as we experience them.

BUILT RESPONSE TO A NATURAL

In the following section, Fallingwater is analyzed as a built response to a natural environment. It is a place rich in spatial variety and quality which I have visited numerous times.

The analysis focuses on the spatial characteristics that define and enrich the experience of Fallingwater. Although important in the total experience of the place, the tactile qualities of material, light, associations, and the specific use of the spaces are not emphasized in this study.

The intent of the analysis is to understand the spatial

LANDSCAPE

principles of Fallingwater, which can then be used as references in the design of other places.

The format of the analysis isolates (utilizes) individual setting within a range of sizes, which are common to any design problem. This serves several purposes. First, it illustrates a range of sizes in which spatial decisions can be made. Although the design of Fallingwater covers a full range of sizes (from a fireplace detail to the landscape) we, as architects, are often limited to a much narrower range of influence. The analysis is designed to illustrate that opportunities to build space

exist at many sizes. Also, it is important to understand that the spatial principles observed at one size, may be applicable to other sizes and/or other contexts.

The following is a brief description of the sizes and settings which will be analyzed. The following questions are addressed within the scope of each "size":

- What type of spaces exist?
- How are they built?
- How do they relate to other spaces?
- What is the experience?
- What are the spatial principles?

FALLINGWATER

Landscape - a non-intervention size

What is the spatial context of the site?

What places/experiences that are found in the landscape can be used as references?

Site

What is the spatial context of the building?

How does the building engage the site?

- Access (moving in)
- Outdoor Room

Building

What spatial types exist?

How are they organized?

- Spatial typology
- Moving in (access)
- Moving up (access)

Collective Areas

What types of spaces exist collectively?

How do individual areas reflect their location in space?

- Moving out

Room

How do individual rooms reflect their location in space?

- Moving up

Personal

- Edge zone

Material/Detail

- Single material
- Material connections

Because Fallingwater exists today and can be studied, the method of observation occurs in the follow order. Plans and sections are used to identify the locations and physical limits of spaces. Perspectives illustrate the human experience and spatial characteristics of the place. Finally, an attempt is made to diagram the principles that organized the spaces.

The process will then be reversed in the design sketch problems.

A complete set of plan, section and axonometric drawings of Fallingwater are found in Appendix A.

LANDSCAPE

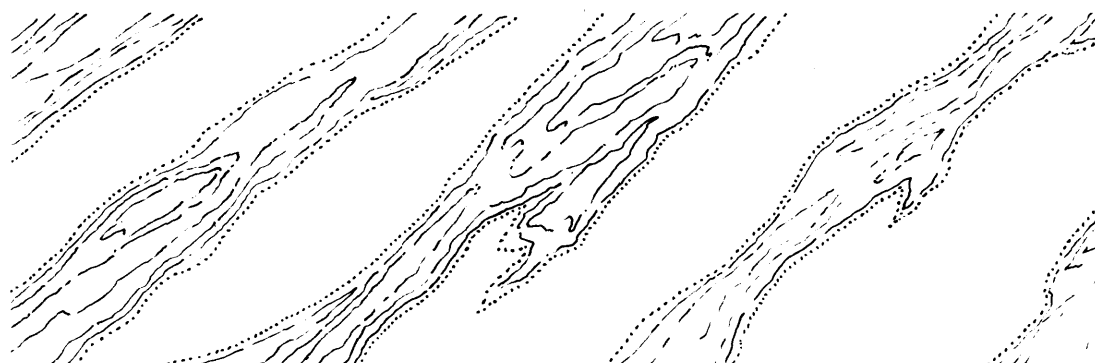
WESTERN PENNSYLVANIA



Allegheny Plateau

The topography of Western Pennsylvania consists of reciprocal forms of ridges and valleys. These contrasting forms are a result of natural processes both within and without the earth.

Over time, layers of sedimentary deposits formed rock strata that were buried thousands of feet deep. These strata were deformed into parallel, open folds by forces of heat and pressure within the

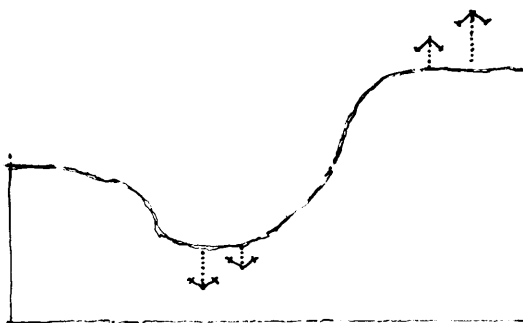


Spatial Context of the Local Environment

earth. As this slow process continued, erosion wore down the rock and filled the valleys. Much later, the land began to rise, forming the Allegheny Plateau. As the land rose higher streams fell farther, gaining force and cutting deeper openings in the valleys.

These continuous directional valleys and ridges exposed the once buried rock folds.

Experienced today, the spatial characteristics of the Pennsylvania landscape are composed of ridges and valleys. Each can be identified individually, having its own characteristics, yet is dependent on the other for full understanding of the whole.



BEAR RUN

The context of Bear Run, the site of Fallingwater, is a microcosm of the larger environment. Although the house is sited within the context of one of Pennsylvania's ridges, lesser hills and ravines can be found which are evidence of the same continuous erosion process. These changes in elevation define territories, although they are less directional and regular than the larger ridges and valleys.

Within this three-dimensional world a number of references exist which have similar spatial characteristics to those found at Fallingwater.

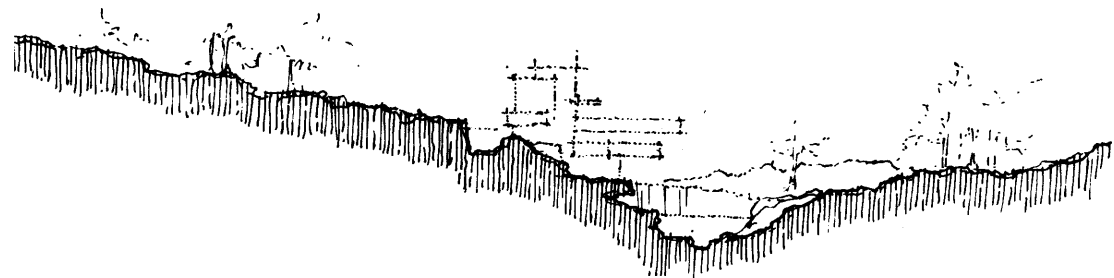


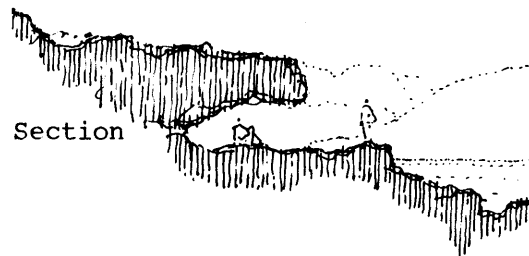
MOVING OUT

The territory defined by the overlapping rocks provides varying degrees of containment (enclosure) if one were to occupy the space. The territory is composed of three zones. Deep within the space one is surrounded on three sides, plus above and below (Zone 1). As one moves towards the edge, the space opens horizontally, yet is

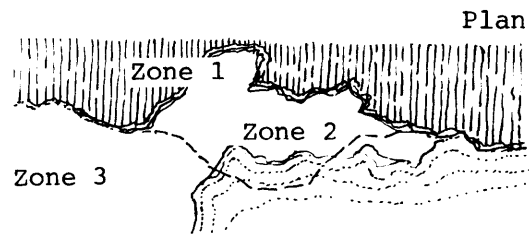
ROCK OUTCROPPINGS

Numerous spatial definitions can be found within the rock outcroppings throughout the area. The ledges and cantilevers found within the rock over which water falls are an example rich in spatial variety.

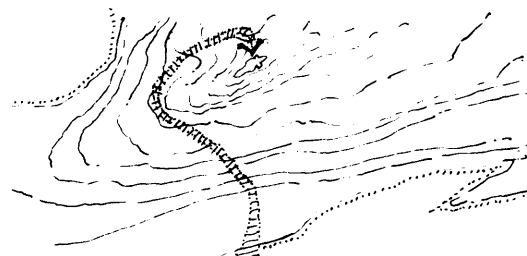




still defined above and below (Zone 2). One is still under cover yet adjacent to the outside. Movement into Zone 3 is accompanied by the absence of cover; the space opens vertically, leaving the ground as the only continuous element.

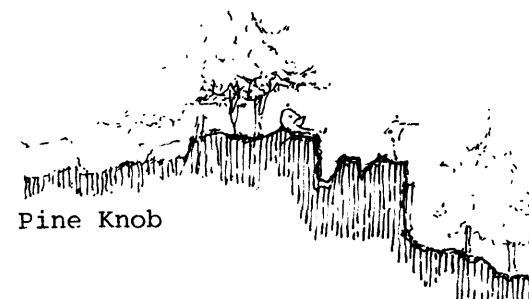


The important characteristics of this space are: that it is directional, has a back and front, and is less enclosed as one moves from deep within to the edge and beyond.



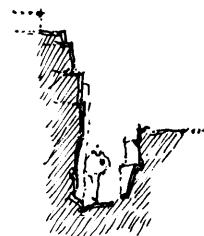
MOVING UP

Not far from Fallingwater at the summit of a ridge overlooking a valley is an overlook called Pine Knob. To reach this spot, one has to climb a path which moves diagonally up the hill and allows few views beyond the forest. On the upper third of the climb the path moves around the summit to the back side of the ridge, making the approach to the overlook similar



in direction to that of the view.

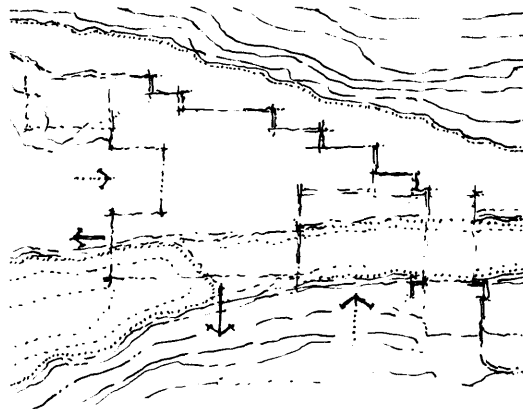
Approaching the overlook, one leaves the forest with its sense of enclosure and arrives at a rock outcropping with a 300° view. This rocky overlook contains several places to sit and enjoy the view. The edge of the rocks are exposed to the sky, providing a sense of openness. Further back, a more contained place is defined by trees above and behind the rocks.



MOVING THROUGH

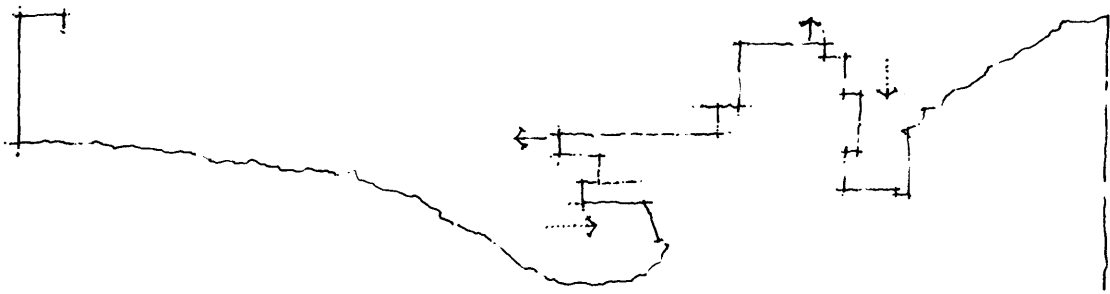
Between outcroppings, another type of defined space may exist. This linear space was most likely formed by water moving through a weak point in the rock strata. The importance of this space is its street-like quality, defined on both sides yet open above.

SITE



The siting of Fallingwater is at the "Y" intersection between the existing access road and stream, linking the two different elements. The back of the house acts as a wall to provide spatial definition for the access road. The front of the house cantilevers over the stream providing a ceiling under which the water flows.

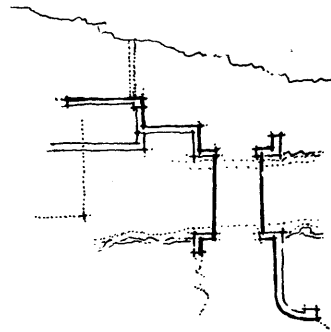
In plan, the house engages the site and defines two types of spaces. The first is the linear space of the access road, defined on one side by the natural contours and on the other by the edge of the house.



The second is a room-like outdoor space, which is defined by both the site and house. This occurs on two sides of the house with differing orientations. An analysis of one of these outdoor rooms and the movement space around it follows.

It is important to understand that the house extend out and engages the landscape spatially. Where vertical or horizontal elements extend into the landscape they combine with natural elements within the site to define a space or territory that shares characteristics of both house and site.

The experience of Falling-water begins with the approach to the house. One moves down a road in the woods through a partially defined territory on either side of a bridge and around an outdoor space.



These territories are defined (formed) by walls: one wall grows out of the landscape and carries across the bridge towards the house, the other wall is an extension

How Does the House Engage the Site

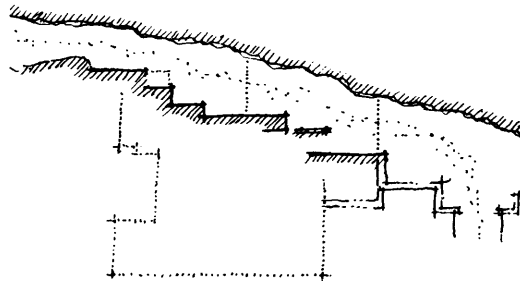
from the house that carries across the bridge to the landscape.



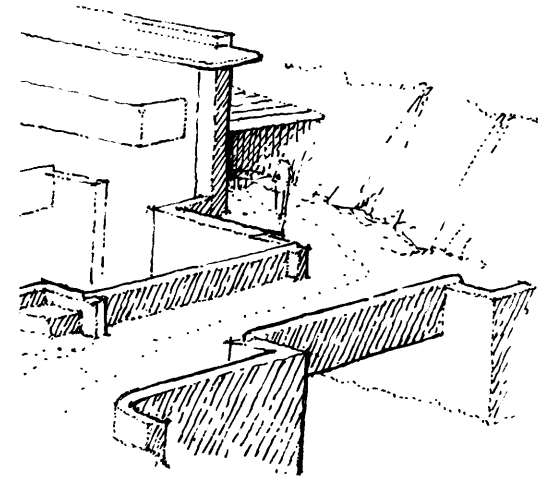
These overlapping, spatially connected walls (one from the landscape, one from the house) define spaces through which one can move from the landscape to the house in a gradual way. This entrance sequence is unlike that of the traditional gate in that movement is continuous and occurs gradually between parallel walls rather than abruptly through perpendicular walls.

ACCESS

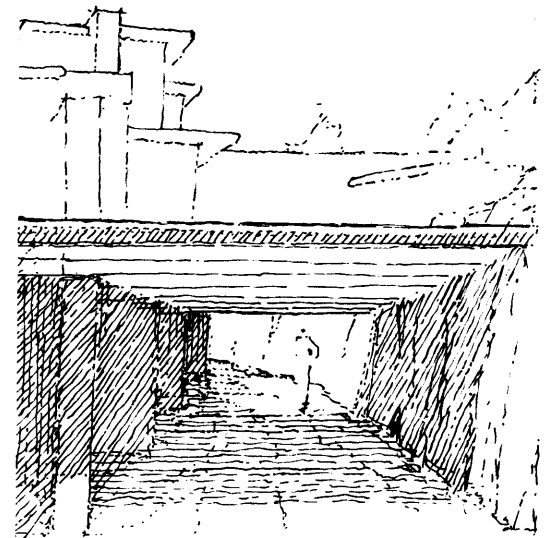
After crossing the bridge the approach is around the outdoor room and into the linear volume of the access road. Although the house seems to be tucked into a hillside, a section through the house and site reveals this directionally contained volume of space. The entrance to the house is defined by an overhead trellis within this volume.

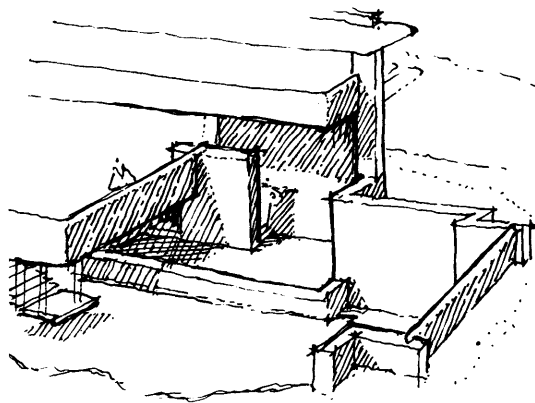
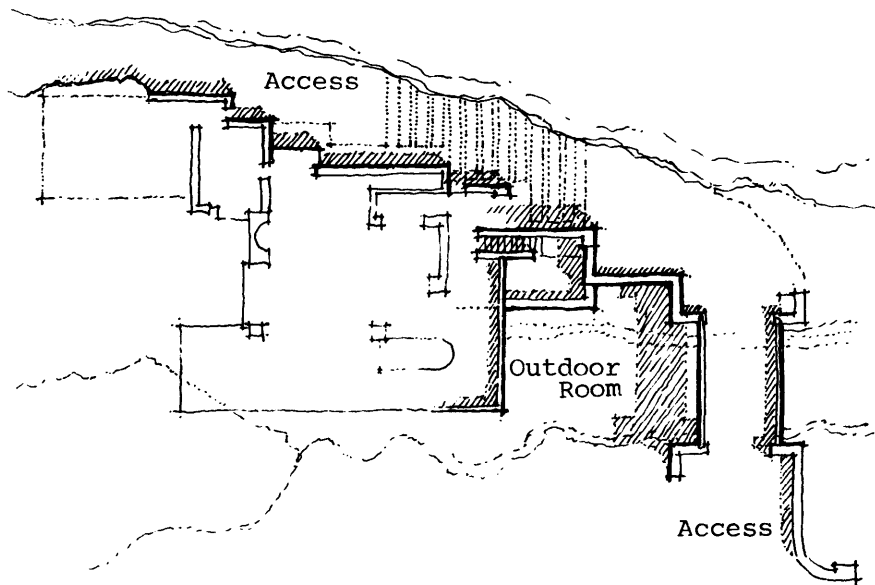


The spatial connection defining access.



The confined nature of the movement space contrasts with the more open space of the outdoor room one moves around to enter.

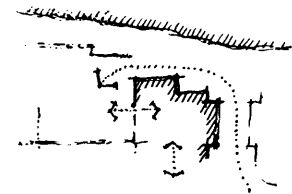




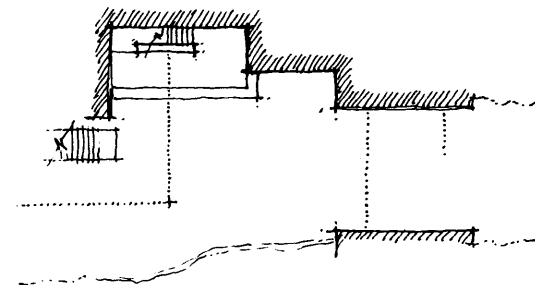
Moving Around to Move In

OUTDOOR ROOM

In addition to providing a "rock" around which one must move to enter the house in the direction of the view, the outdoor room is an extension of the living room. Although not a use space, this outdoor room is built



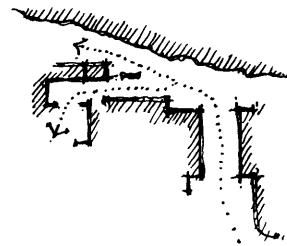
similarly to the main living area. Thus, the extension of the interior to the exterior is less abrupt because of the in-between space of the outdoor room.



Plan of Outdoor Room

MOVING IN

The entrance sequence begins in the landscape and proceeds through a continuous series of connected territories which become more confined, and therefore more defined as one moves toward the interior. The walls defining these territories are spatially connected and overlap, allowing the transition to be a three-dimensional (continuous spatial) experience.

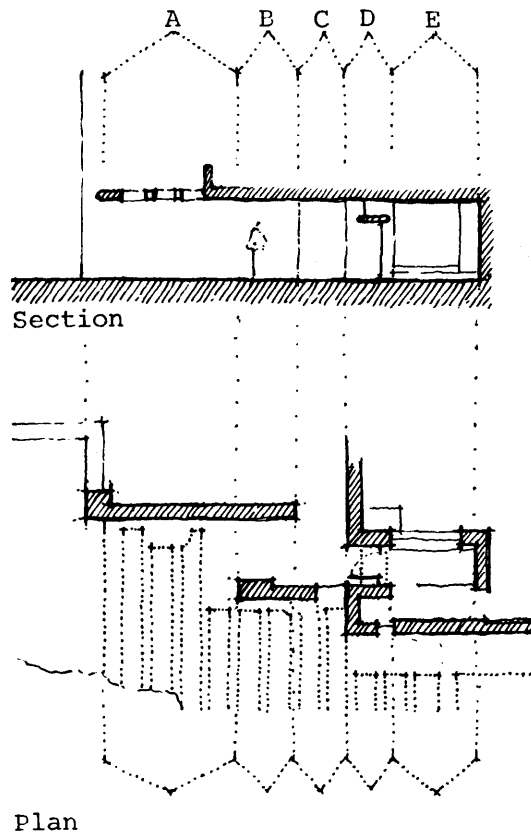


The entrance volume is parallel to the access road and penetrates the main volume, sharing characteristics of both interior and exterior.

The transition into the house is through a series of zones that define the entrance volume.

Either the vertical (wall) or horizontal (ceiling/trellis) element defining each zone continues, extending a part of the zone, thus a less abrupt transition is experienced.

Entering as a Three Dimensional Experience



Connection From
Other Spaces



Act of
Entering



Opening Before
Entering



Inside/
Outside



Connection to
Other Spaces



SPATIAL ZONES OF THE ENTRY

Vertical
Elements

Horizontal
Elements

A One Wall/Site

Trellis

B Two Walls

Ceiling

C No Walls

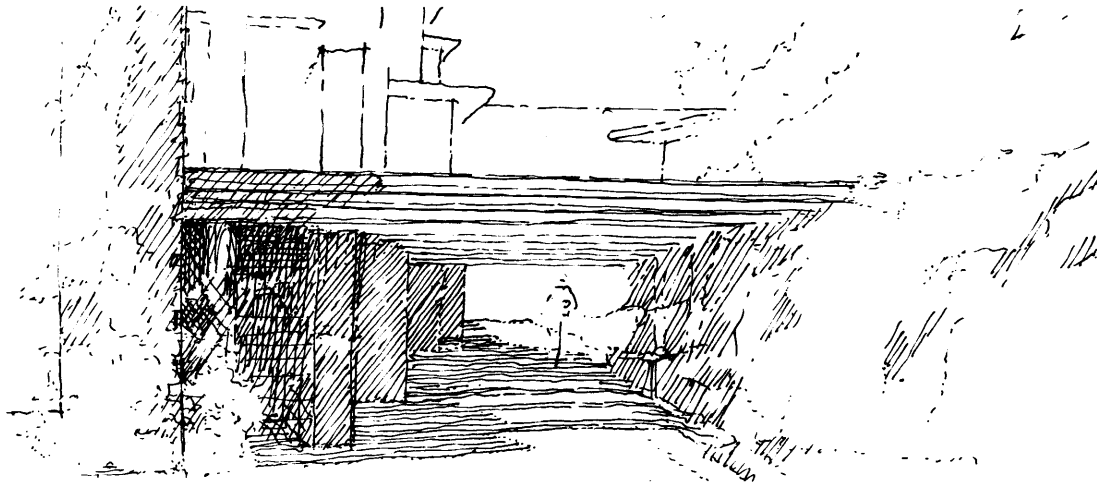
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D Two Walls

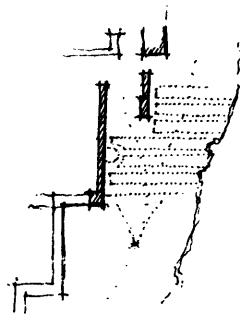
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E Two Walls

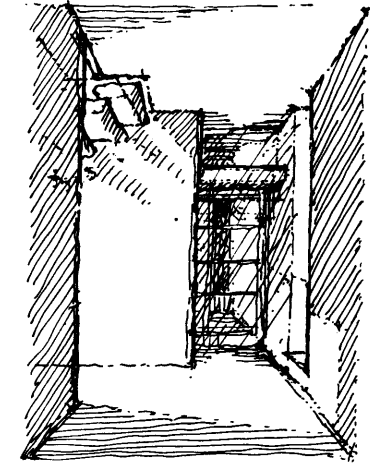
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The entry is defined as part of a larger movement space; both are united by the trellis. The smaller dimension, the diminished light, and ones inability to see the end distinguish the entry from the access.



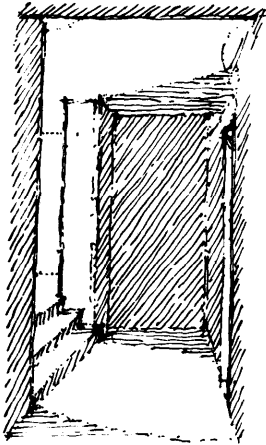
The two walls and ceiling defining the entry all begin at different points. This allows the spatial transition to be a gradual one. Initially, one is in the zone of a wall, then a wall and partial cover (trellis), and finally full cover (roof) before moving in between both walls.



Within the entry volume the penetration into the main volume of the house is slowed and marked with light as the wall to the left ends. This creates an opening towards the stream and signals the direction one will turn to enter the main living space once inside the house. The wall to the right continues beyond this point and into the house defining the interior entry.

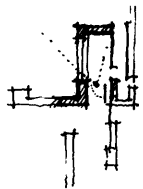


The overlap of the parallel walls define a continuous directional space. The ceiling reinforces this sense of direction by continuing inside.

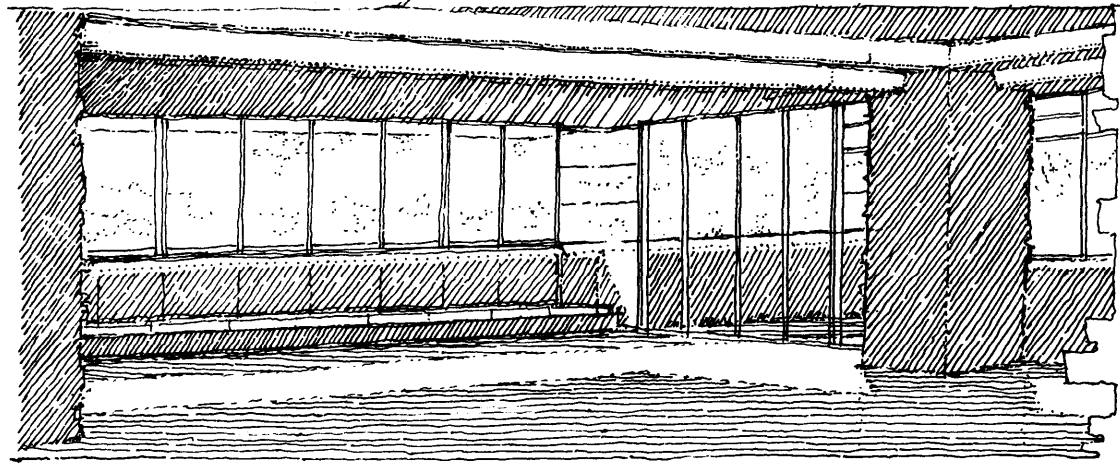


The zone between inside and outside is marked with a single horizontal plane above the door providing a clear understanding of the entry volume.

The volume clearly ends, yet is connected to the main living area by steps and a continuous ceiling.



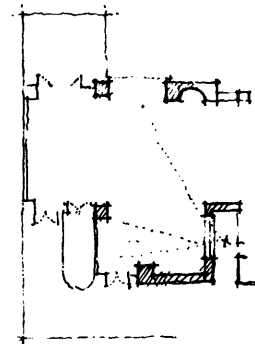
Thus, the ceiling is the only continuous element defining the transition from outdoors to the main living space. It is one continuous plane from the trellis to the living area.

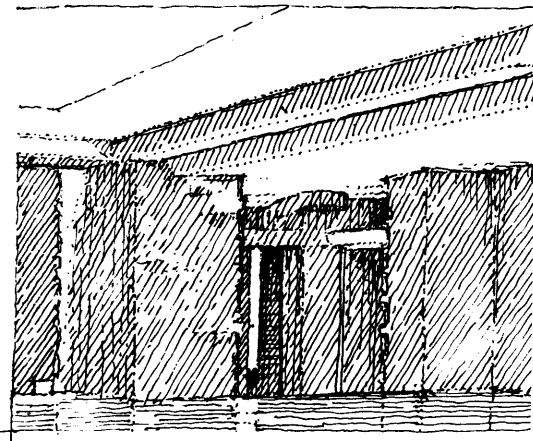


After moving through a very contained volume terminated by a solid wall, one turns to move up several steps and into the main living area.

This space is horizontally oriented; its termination appears to be the trees on the bank opposite the stream. After the process of moving in, one is visually outside again.

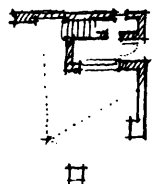
"MUST GO IN TO GO OUT"



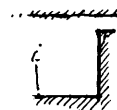


The strength of the entry volume is lessened when viewed from the main living space. The visual direction is perpendicular to the physical movement. A sense of depth is perceived in looking across this entry volume to the adjacent space which opens to reveal light and the exterior.

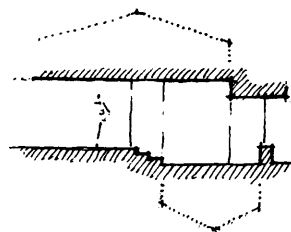
The entrance area opens out, around the corner and up.



Variation of
Entry Wall



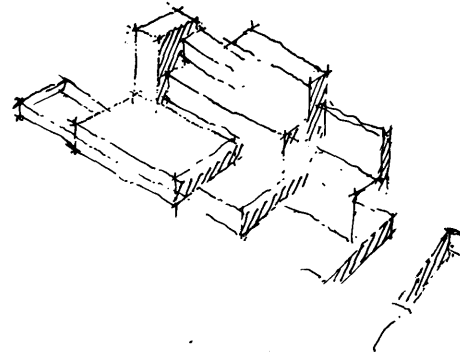
Overlapping Floor and Ceiling Zones



The ceiling visually connects the entry to the main living area as the floor level changes. The floor then connects the entry to the adjacent space as the ceiling height changes.



SPATIAL TYPOLOGY

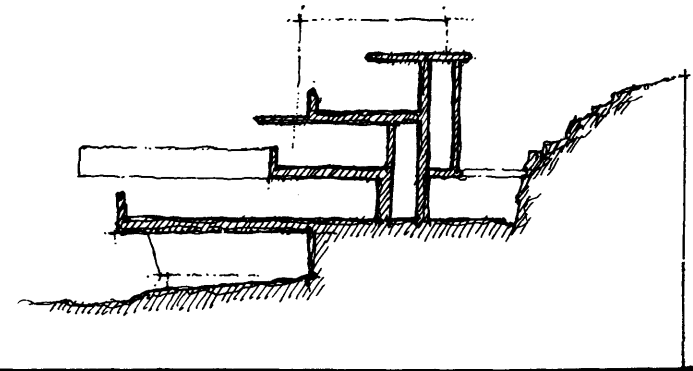


The spatial organization of the building consists of tightly contained vertical spaces to the rear of open horizontal spaces.

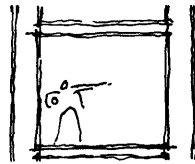
Both types of space become less contained as one moves out to the edge or up to the top of the house.

Both of these spatial types existing collectively not only provides more spatial variety, but allows a fuller understanding of each type individually.

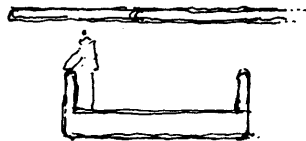
To appreciate up, down must be present... to understand open, closed must be part of the experience...



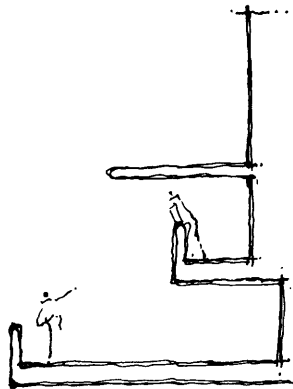
Spatial Organization of the Building



Contained...Vertically Oriented

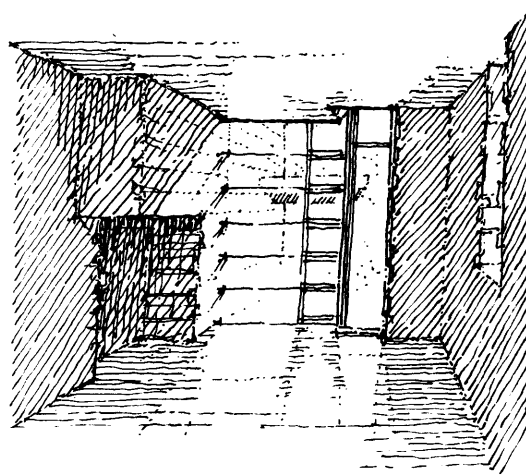


Open...Horizontally Oriented

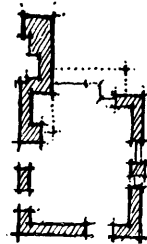


Contained and Open

CONTAINED SPACES



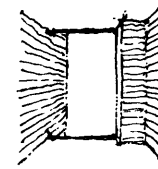
View from Contained Space
Second Level Bedroom



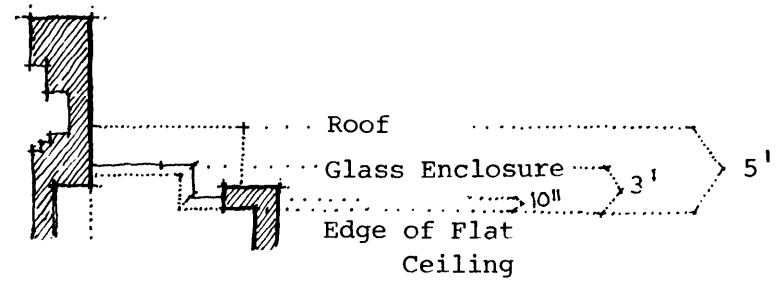
Plan at Second level

In the contained spaces the vertical elements (walls) dominate the horizontal elements (floor and ceiling). Therefore, there is no extension of the floor zone beyond the containment.

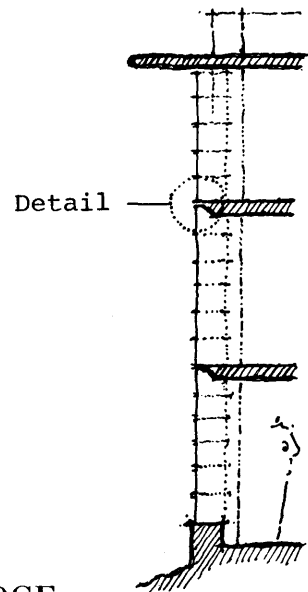
This forces a very abrupt transition between interior and exterior. When there is a physical connection to the exterior it is through an opening in a wall.



ENCLOSURE AND EXPOSURE

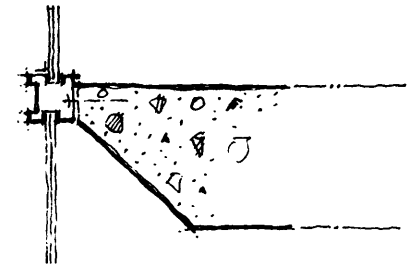


DEPTH OF THE EDGE ZONE



BUILDING EDGE

This abrupt edge condition reinforces the dominance of the vertical. The difference between the top, middle and bottom levels is determined by the way in which the floor and ceiling terminate at the edge.



EDGE DETAIL

The floor slab is chamfered providing a space at the edge. Therefore, the vertical dominates the horizontal, allowing the boundary of the space to be just out of view.

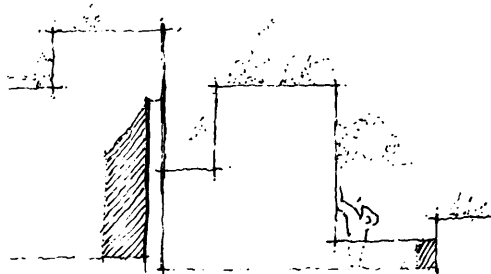
BUILDING SYSTEM

The vertical elements that define the contained spaces (walls) are built by the assembly of individual stones. These walls engage the space around them both in plan and elevation.

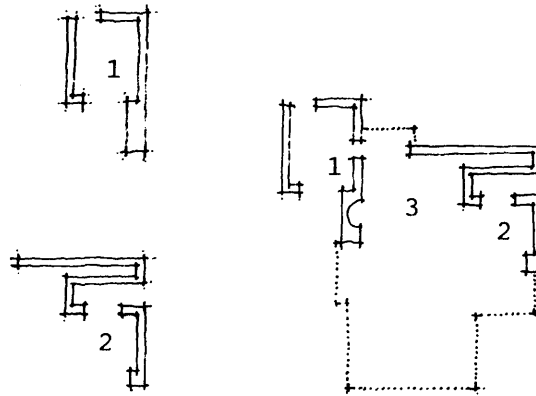
Elevation of Stones



By cantilevering the stones, the wall is understood as an addition of spatial zones.



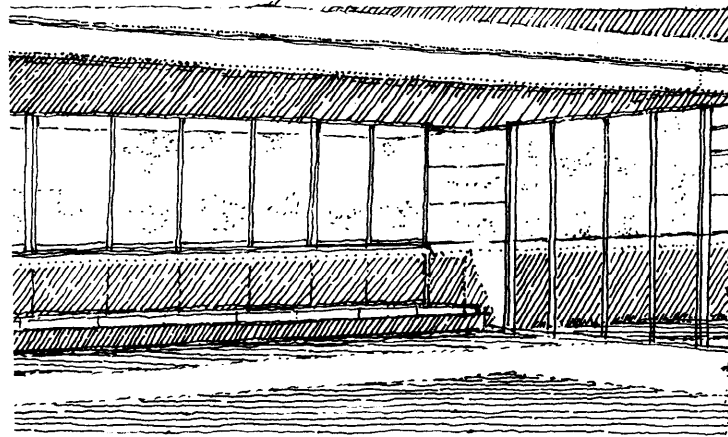
At a larger scale, additive walls of different heights engage the space around them.



These vertical elements do not completely enclose space.

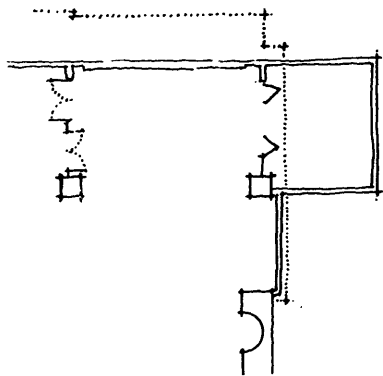
The vertical elements influence a zone of space both inside and out. By spatially connecting two contained spaces a third space is defined without the use of additional materials.

OPEN SPACES



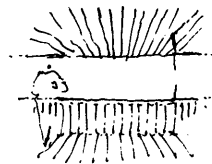
View From Open Space

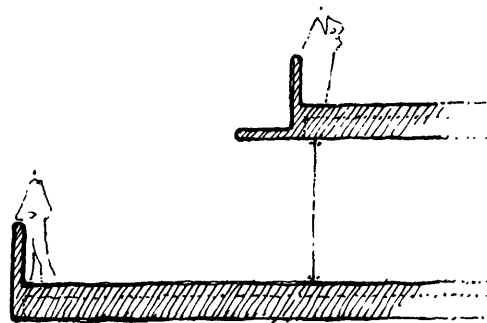
In contrast to the contained spaces that were defined by vertical elements, the open spaces are defined by the horizontal elements of floor and ceiling. By minimizing the verticals of the weather enclosure, the implied boundary exists beyond the interior space. Because the horizontal elements are free to engage the exterior, there is a subtle transition from inside to outside.



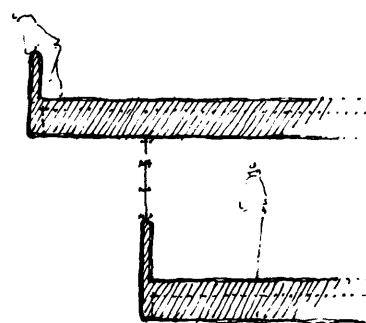
Plan at First Level

ENCLOSURE AND EXPOSURE

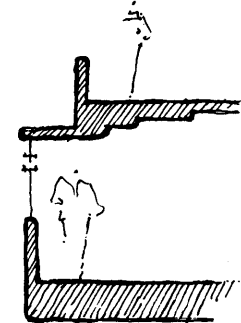




Section A



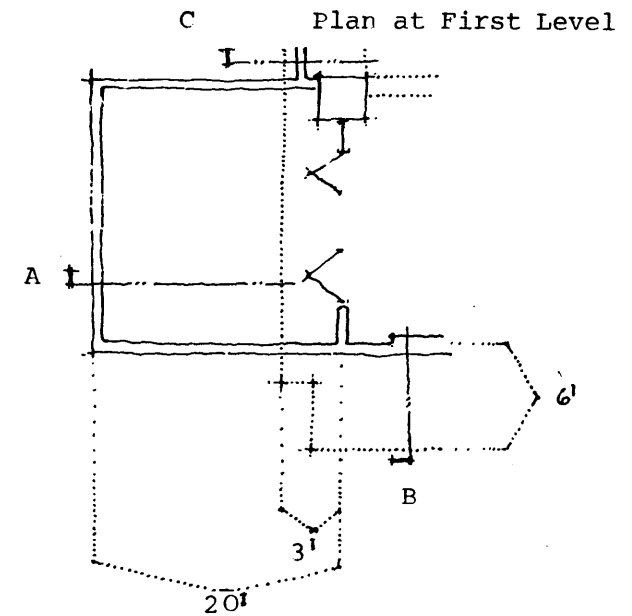
Section B



Section C

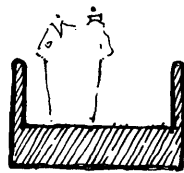
BUILDING EDGE

A variety of openness is achieved by the relationship of horizontal elements (floors) defining the edge zone. All three possible relationships can be found in the house.

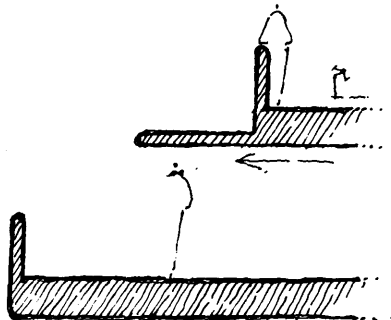


DEPTH OF THE EDGE ZONE

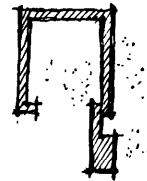
BUILDING SYSTEM



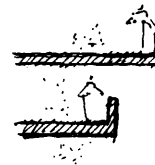
The open spaces are defined by horizontal concrete trays. These trays define territories by turning up at the edge. Since the trays either span between walls or are cantilevered, they also define space below them.



When the edge of a tray is defining a transition zone below, both enclosure and exposure are built in the form.



Plan

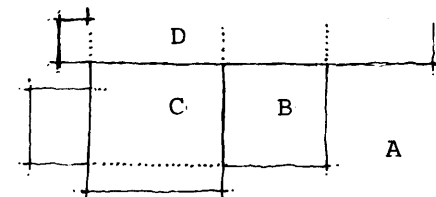


Section

As the walls defined a zone of space inside and out, the trays do so above and below.

A variety of spatial relationships result from stacking and overlapping these trays so that each territory comes in contact with every other territory.

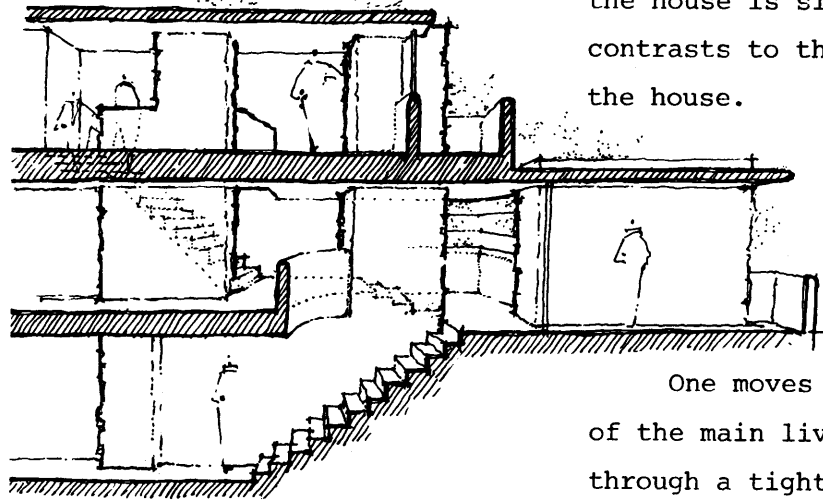
D-C	D-B	D-A
C-D	C-B-C-A	
B-D	B-C-B-A	



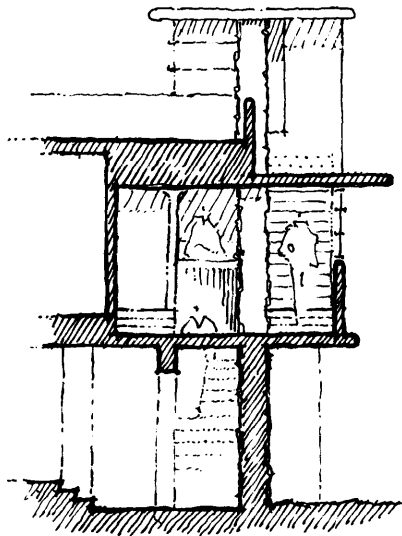
D - Third level
C - Second level
B - First level
A - Landscape

MOVING UP

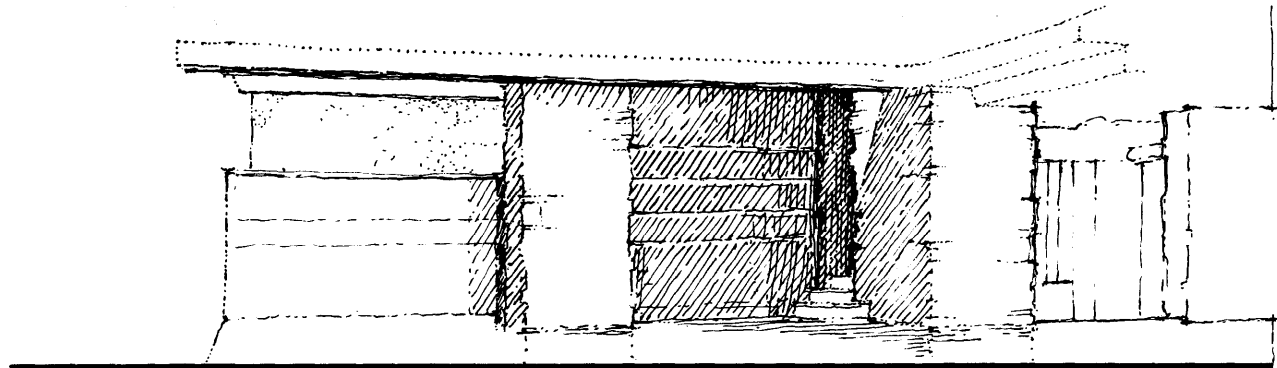
The transition up through the house is similar in spatial contrasts to the transition into the house.



One moves from the openness of the main living area up through a tightly contained volume to the second level. From this landing, one moves out horizontally in several directions to the second level living areas, or moves up to the third level through another contained volume.



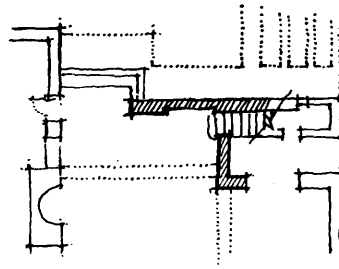
The spatial characteristics of the transition up include those found in both the contained and open spaces discussed previously. In addition, the experience is enriched by a third type of space found at the second level landing which has qualities of both types of space. Although the area is not large, there is a transparency to the enclosure which allows the limits of the space to be evasive.



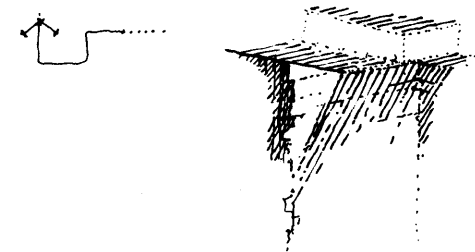
Vertical Access

Although the stairs are hardly visible, the zone of movement is given definition by the two vertical piers.

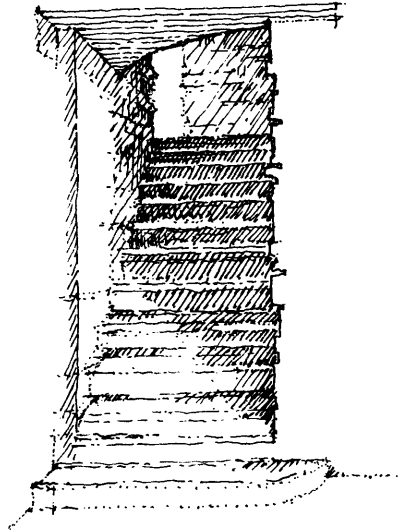
This zone is part of a larger area, which is defined by a continuous ceiling height. Both enclosure and exposure are built into the wall defining the area. To the left of the central pier, the ceiling continues out over the partial wall; to the right the wall continues up to full height.



Detail at Ceiling/Pier



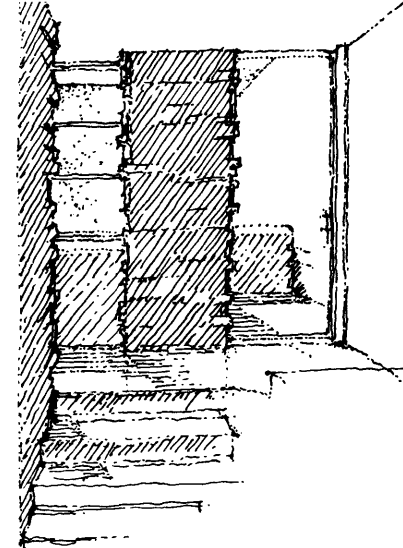
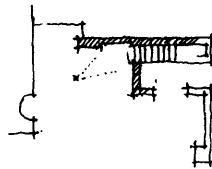
The vertical direction is reinforced by the continuation of the pier behind the dropped ceiling and the indirect light which washes the pier from above.



The ceiling moves in and defines the stair volume, reinforcing the continuous spatial experience of moving up.

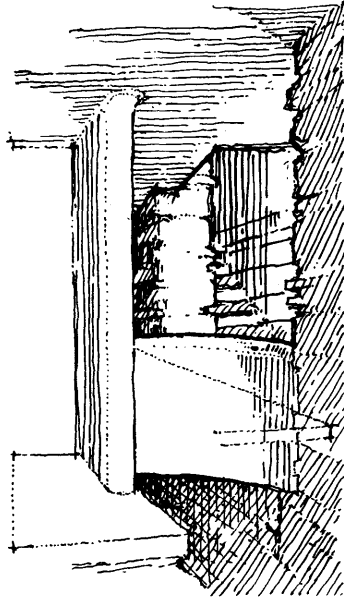
The ceiling is cut back towards the light revealing the direction of movement above.

This light from above allows one to be "in" that space while still moving up to it.



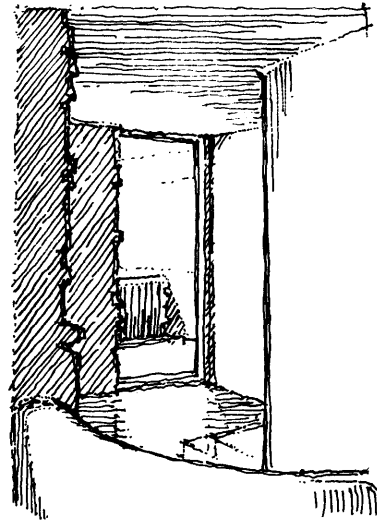
Arriving at the second level landing one is visually oriented to the exterior in two ways: to the left is an abrupt inside/outside connection, and to the right there is an extension of the interior out to the exterior (outdoor terrace).

The solid enclosure (wall) separating these two exposures is important in several ways. First by separating the two exposures each can be understood individually. Second, by concealing the limits of the outdoor terrace, a sense of spaciousness is provided in a physically tight space. Third, in conjunction with the wall on the left the wall ahead defines "inside" allowing one to move to the left and be "outside".

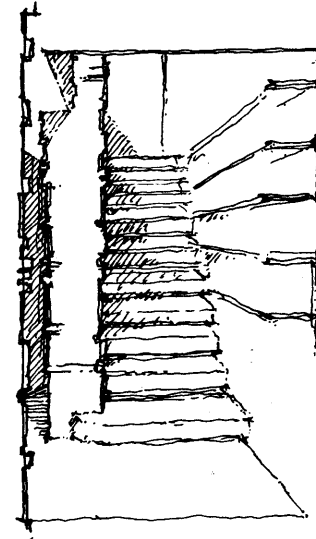
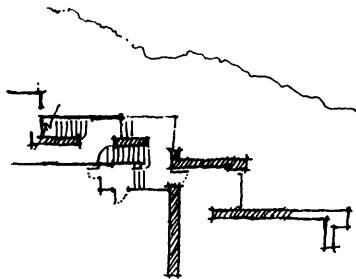


View Across Down
to Up and Out

The containment at the second level becomes very transparent. Views across three parallel paths, provide a variety of spatial relationships. The spatial limits of the paths are not always visible, allowing the volumes to continue out of sight.



View from "Outside" thru
Inside to Outside

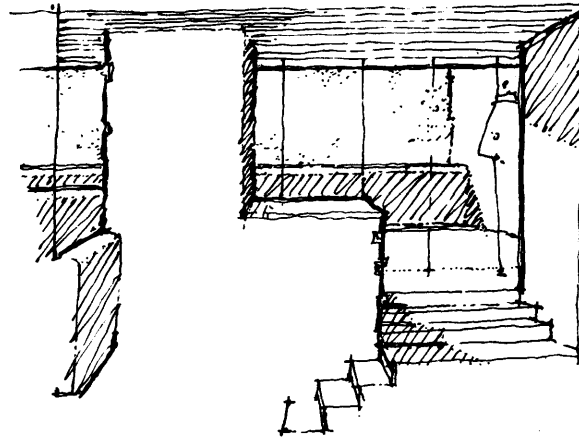


After moving "outside" of the wall and reversing direction, two options appear. One can move back "in" to living areas beyond view on the left or move up to the third level.

The volume up is less enclosed than that connecting the first and second levels.

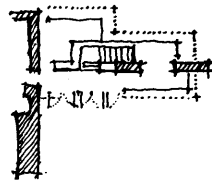
Unlike the detail at the first level, the ceiling is held back from the stair volume.

The openness of this volume acknowledges the spatial difference of moving up to the third and top level.

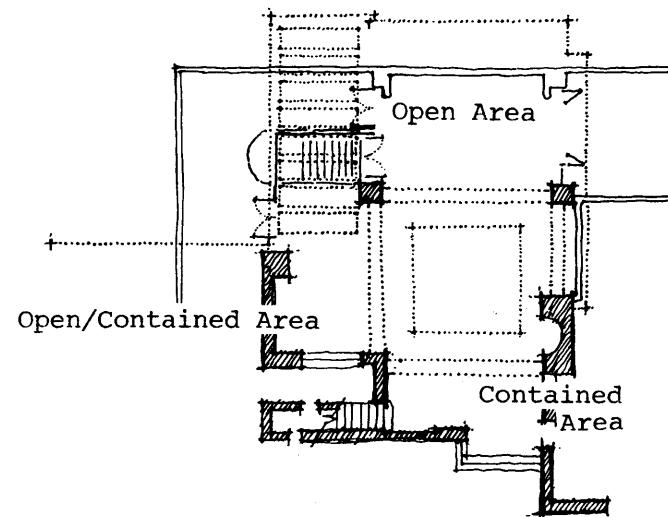


Movement to the third level is along the same wall that began the "moving up" sequence at the first level, although now one is moving through a space on the other side of the wall.

The "movement up" terminates in the same way the "movement in" did; one is forced to turn and move up into a space which opens horizontally to the exterior.

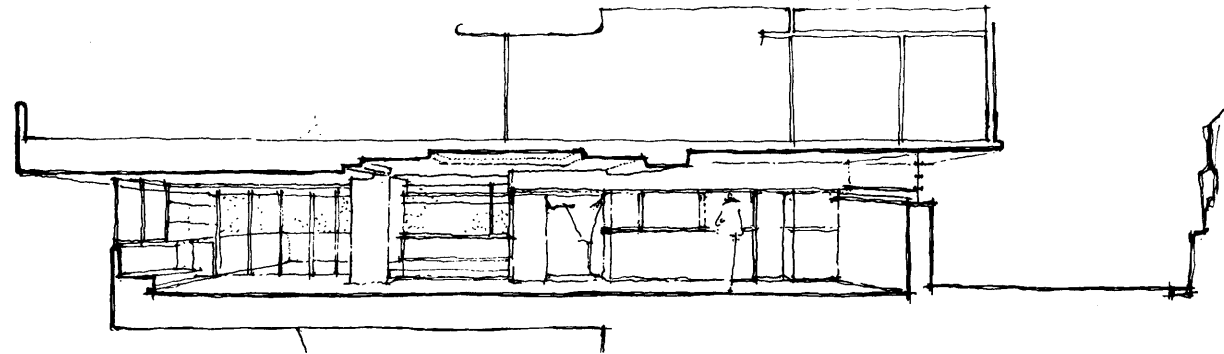


MOVING OUT

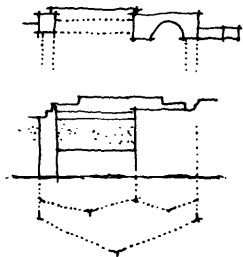


The main living area of the first level consists of a number of areas defined both as contained and open spaces, and combinations of each. The result of this is a gradual progression from the most contained areas deep within the space to the very open, virtually outdoor area at the cantilevered edge.

What unifies and provides a sense of calm to the entire space is the ceiling. The central ceiling recess defines a virtual square around which the other areas are organized. Although all four corners of this central area are marked with masonry, the area is open on three sides to



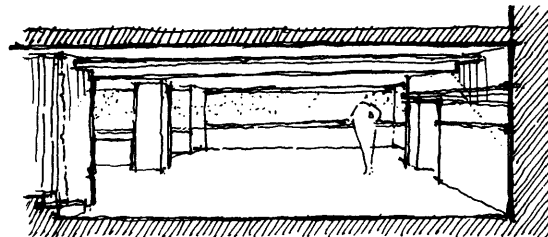
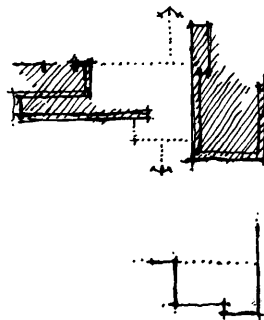
the adjacent areas. The fourth side is the in-between zone of the progression from contained to open spaces. As a result, this side which separates interior from exterior consists of both enclosing and exposing elements.



Spatial Characteristics as a Reflection of Location

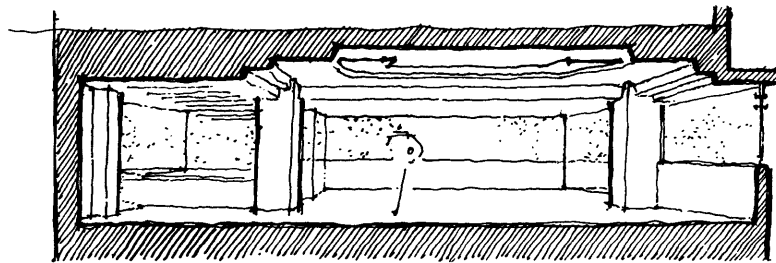
CONTAINED AREA

The most enclosed area is defined between two contained spaces. At the physical connection of these two elements, a space is created which gives added depth and a second exposure to the area.

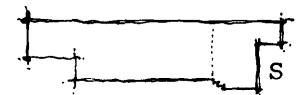
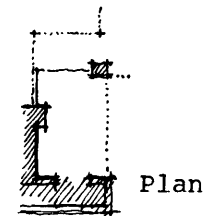
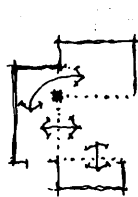


One wall and the ceiling stop to define the area. The other wall and the floor continue, connecting the area with the central living area.

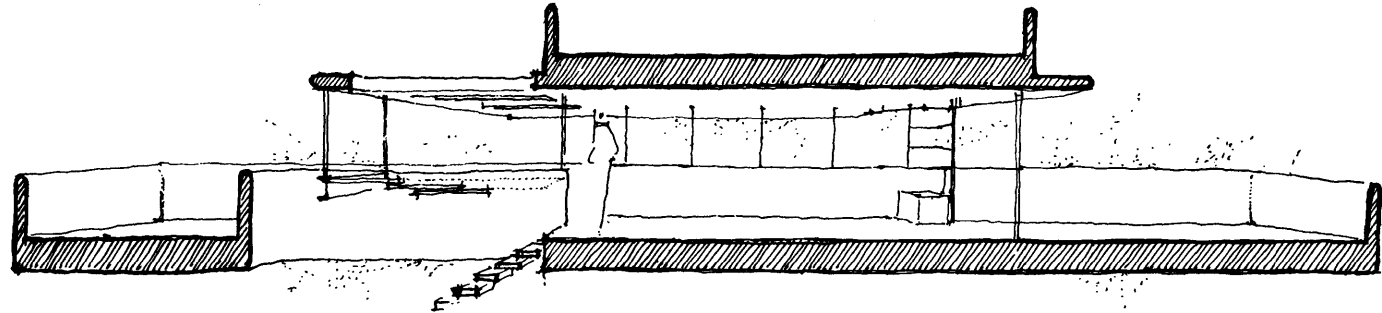
CONTAINED/OPEN AREA



The transition from the contained space of the area previously discussed to the open space at the edge occur within this area.

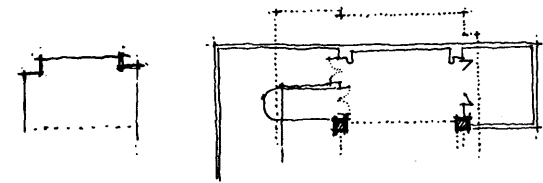


Plan and section both show smaller areas within the larger area.

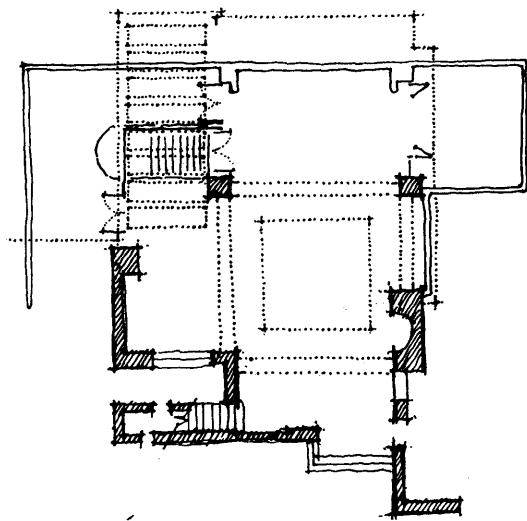


OPEN AREA

Beyond the masonry piers, one is essentially in an enclosed outdoor space. The area extends horizontally on three sides. By building space and light into the ceiling form, (trellis) the area opens vertically towards the sky. The opening down to the stream from this area allows one to understand that the area is cantilevered in space. Thus this area opens to the exterior on three sides, in addition to above and below.



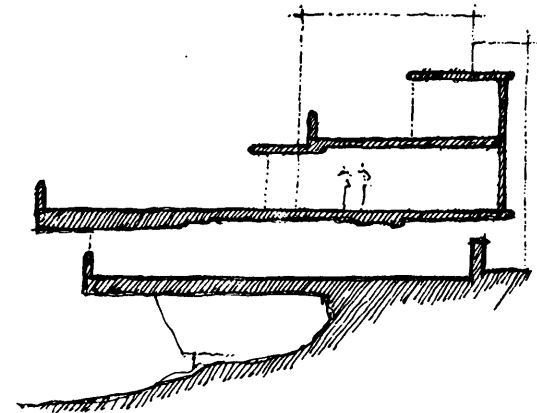
Beginning at the masonry piers, the edge zone (open area) is defined on three sides only by horizontal elements (concrete trays).

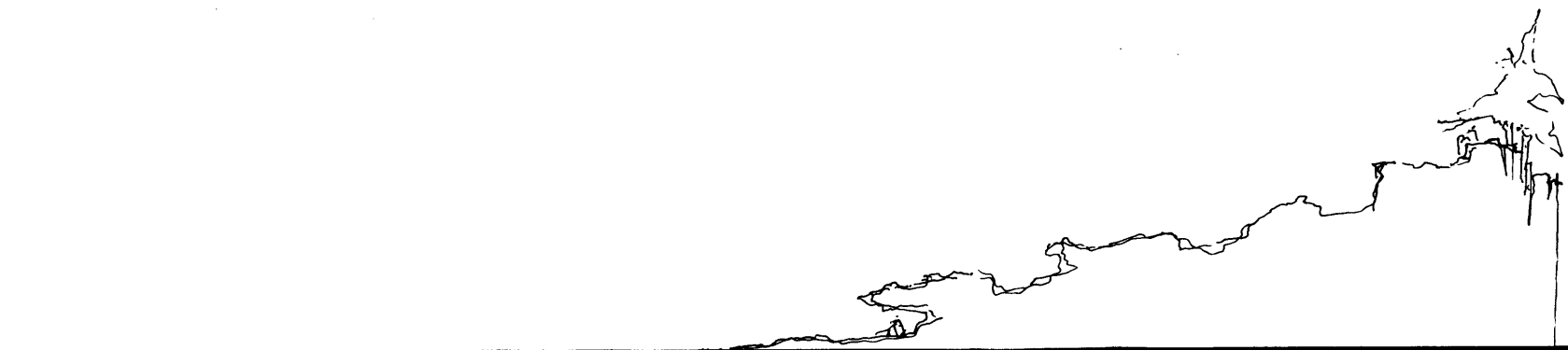


MOVING UP

The definition of individual rooms reflects the increasing degree of openness as one moves vertically up through the house. As the previous example illustrated the increasing openness as one moves out to the edge, the spaces stacked vertically also become more open as one moves up to the top.

Both horizontal and vertical elements can define varying degrees of openness.

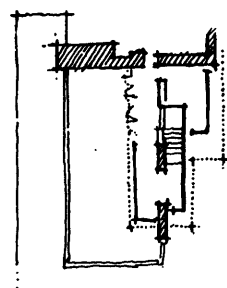




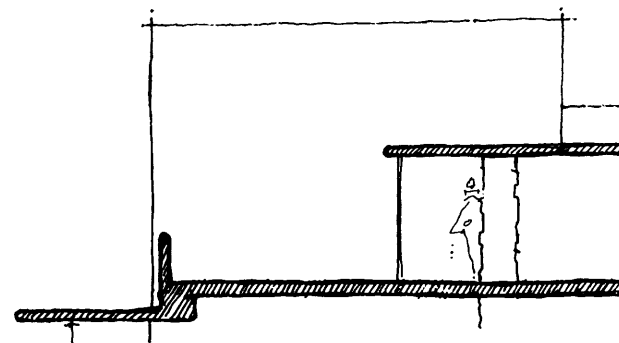
Spatial Characteristics as a Reflection of Location

On the second level, the ceiling is the primary element defining interior zones and their relationship to the exterior.

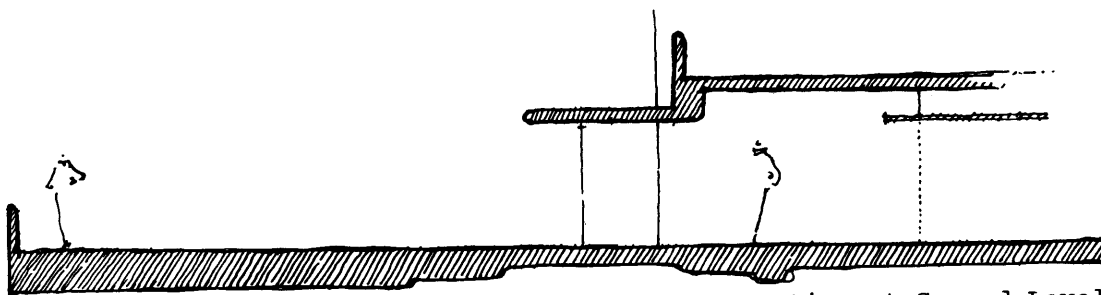
Conversely, on the third level, two free standing walls define the relationship of interior and exterior.



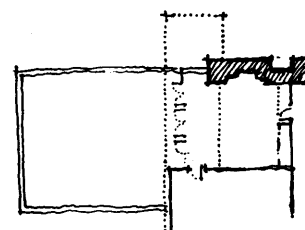
Third Level Plan



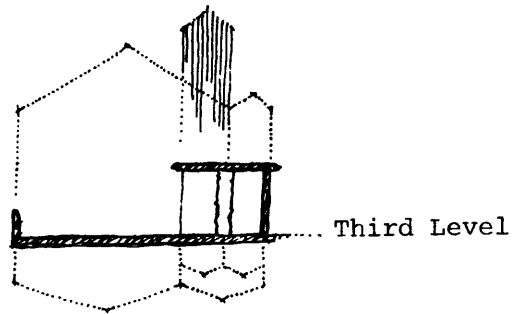
Section at Third Level



Section at Second Level



Second Level Plan

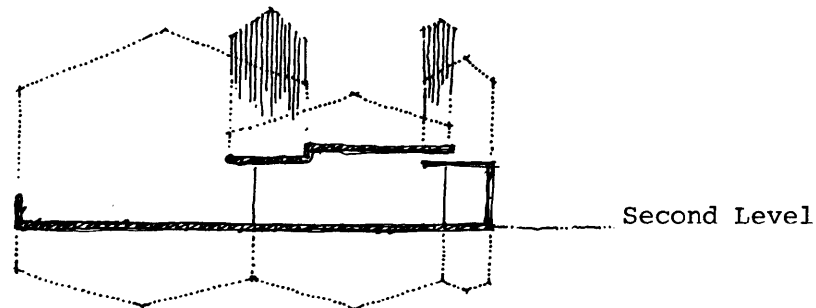


An edge zone is built between the free standing vertical walls and the edge of the ceiling.

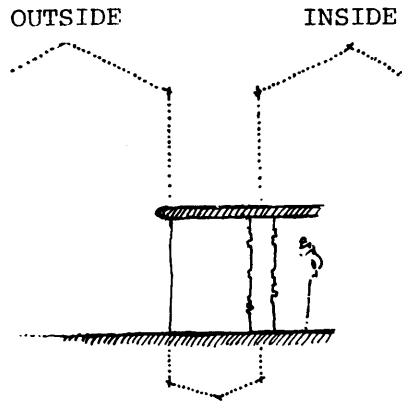
EDGE ZONE

The edge zone is an area that exists between two separate spaces and shares definitions of each, providing an overlap of the two spaces.

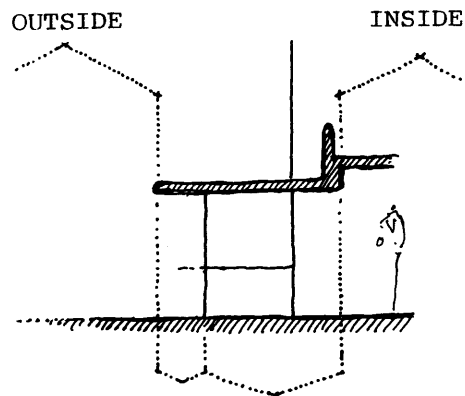
The size of this zone and the way it is formed determines the degree of openness within the interior area.



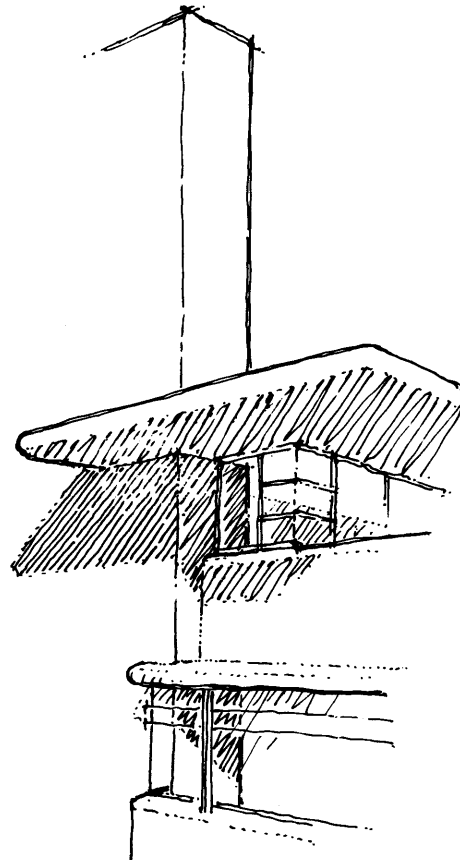
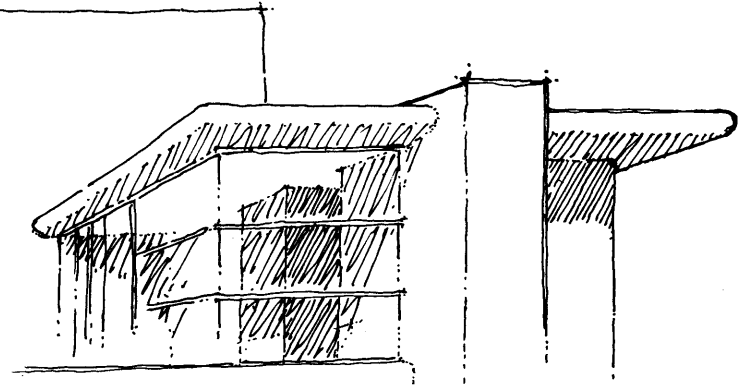
Two edge zones are defined by a change in ceiling height.

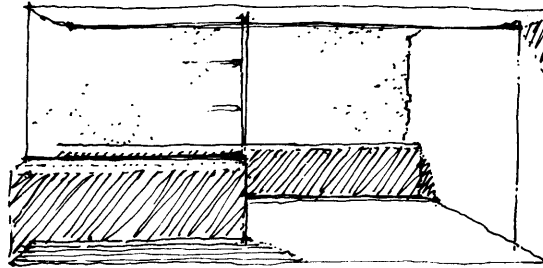


The edge zone on the top floor separates the interior area from the exterior by only one layer of space.



The edge zone on the second level separates the interior areas from the exterior by two layers of space.

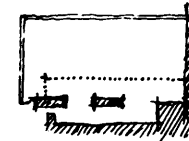




The interior is understood as a captured piece of the larger exterior territory.

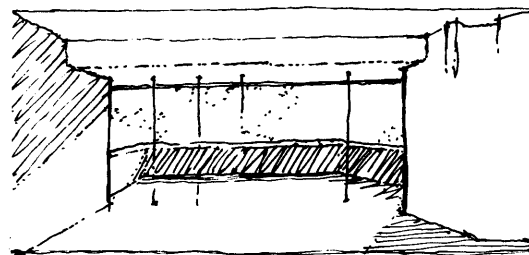
The wall is continuous, defining both interior and exterior space.

The ceiling is a flat plane and does not define any smaller areas.

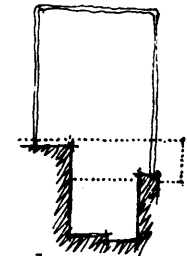


Plan at Third Level

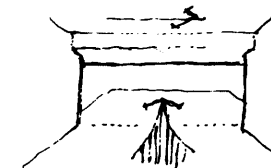
CONNECTION TO OUTDOOR SPACES



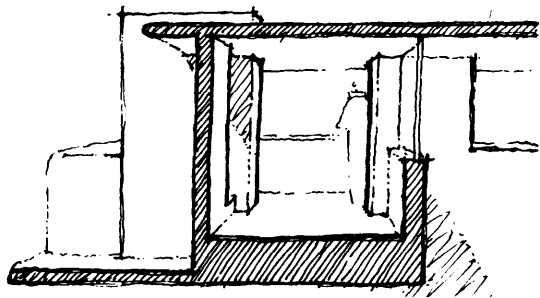
Because the interior and exterior territories do not share any spatial definitions beyond the edge zone, they are discernable as two separate but connected territories (spaces).



Plan at Second Level



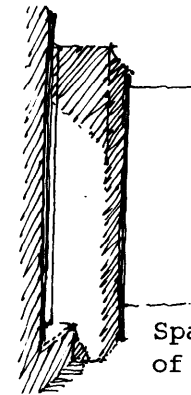
The walls end in the same zone as the enclosing form of the ceiling.



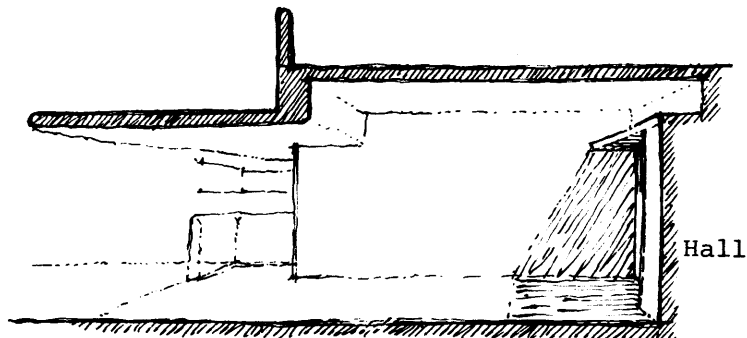
Section @ Third Level

The top level interior area is less enclosed; there are visual connections to adjacent spaces behind the free standing walls.

CONNECTION TO OTHER SPACES



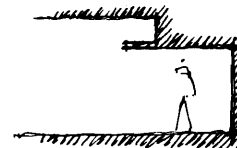
Space at the connection of two enclosing forms.



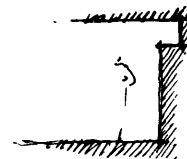
Section @ Second Level

The entry zone is defined by continuing the ceiling of the adjacent space into the interior area.

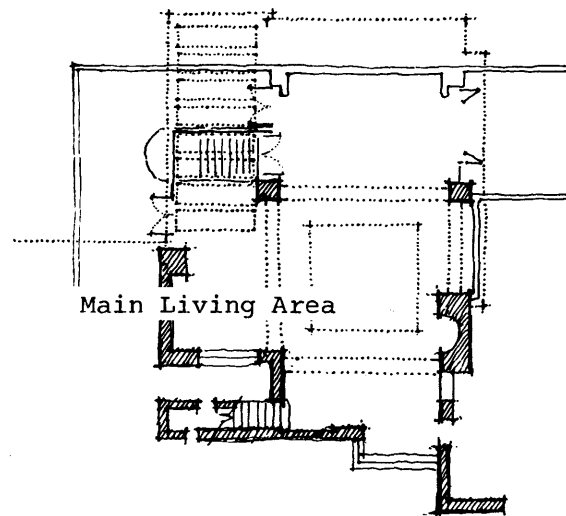
A space is built between this ceiling and the ceiling of the interior, and is washed with indirect light. This visually eliminates the corner, thus the space appears to continue beyond.



Second Floor Entry Edge Variation



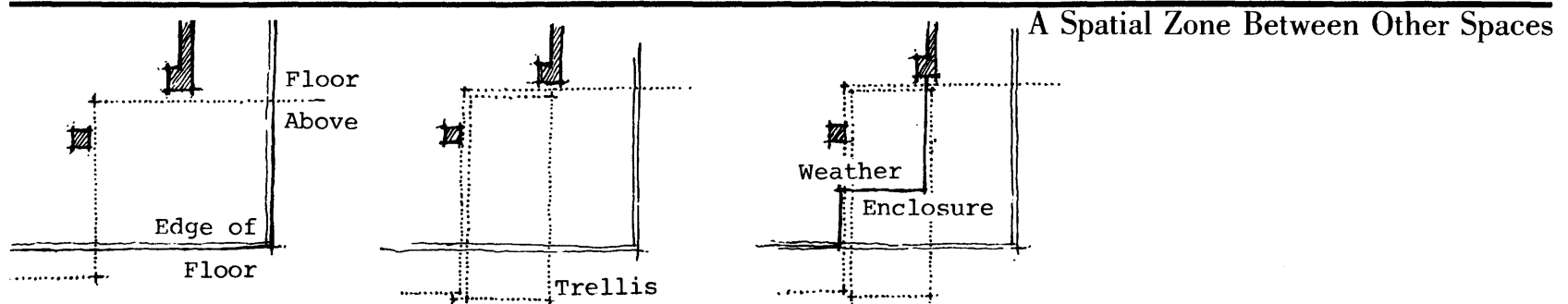
EDGE ZONE



A variety of spatial relationships exist within the edge zone at the trellis corner of the main living area.

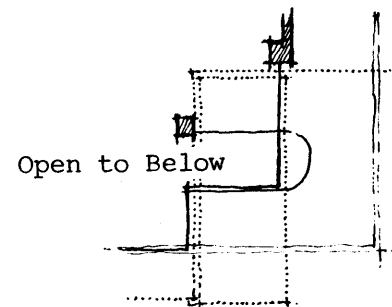
The zone provides light deep within the living area and reinforces the reciprocal relationship (and the subtle transition) between interior and exterior. It also provides visual extensions vertically, both up to the sky and down to the stream.

It is important to understand the transparency of this zone in contrast to the substantial containment found within the main living area.

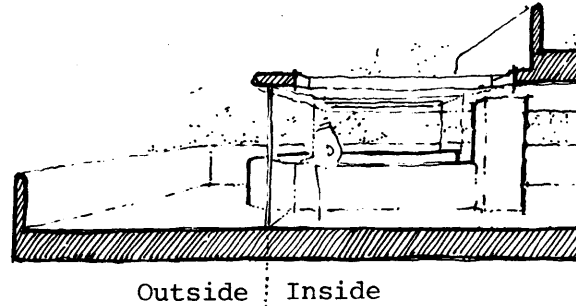


BUILT SPATIAL VARIETY

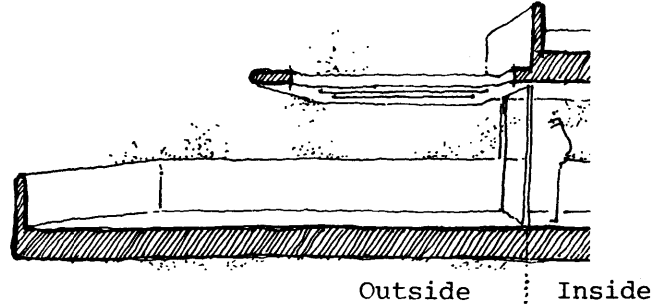
Areas of differing spatial characteristics are built by displacing the vertical and/or horizontal elements.



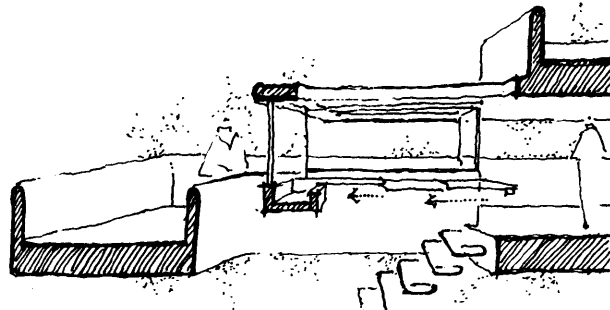
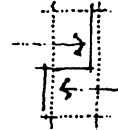
A space built into the floor.



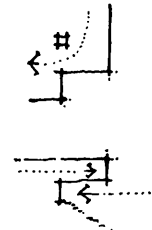
The displacement of the inside/outside wall provides a covered outdoor area adjacent to a covered indoor area.

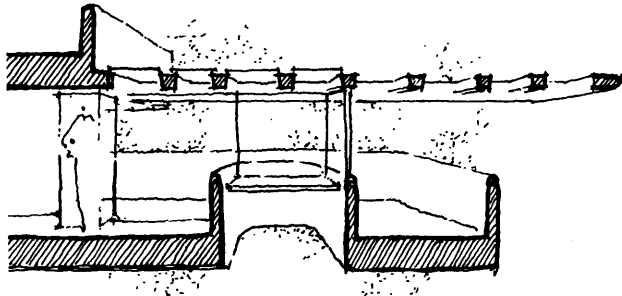


Because of the displacement of the inside/outside enclosure and the opening of the floor below, the trellis covers three spatial zones.

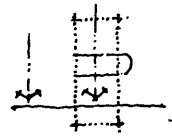
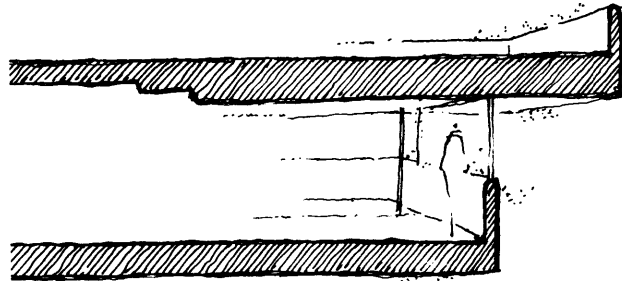


By providing a horizontal enclosure to the stair below, the interior and exterior space overlap in section. This illustrates the reciprocal relationship of the spaces.





Two relationships exist adjacent to one another:
 A visual connection from interior to exterior through several zones.
 A direct connection between interior and exterior.



RELATIONSHIP BETWEEN SPACES

A variety of relationships result when each space contacts each other space.

INSIDE/LANDSCAPE

A-B-B/E-C-E
 A-E
 A-B/E

INSIDE/OUTDOOR TERRACE

A-B-D
 A-B-C
 A-C-D

TYPES OF SPACES

INSIDE

A - Main Living Area
 Continuous Ceiling

B - Open to Above
 Partial Cover

B/E - Open to above
 partial cover

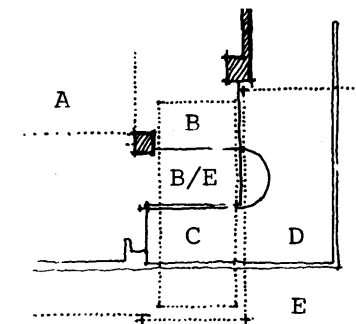
OUTSIDE

C - Open to Above
 Partial Cover

D - No overhead cover

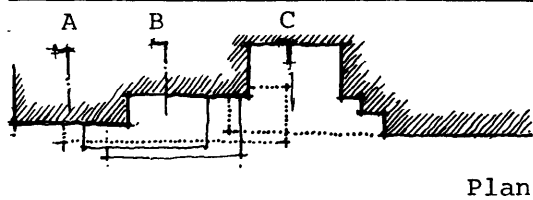
E - Landscape

Open to below
 removable cover

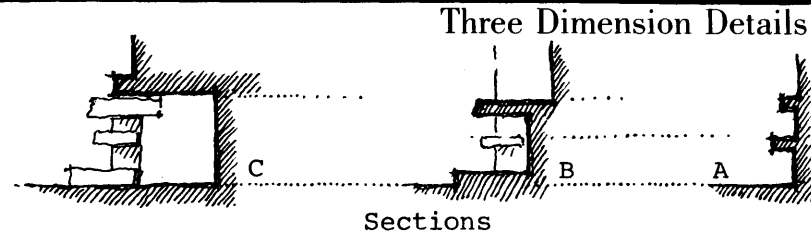


MATERIAL

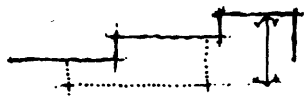
Building space/depth into the material scale details can define "a place" and/or a better understanding of the individual building parts. This depth can be built into the same material or occur at the junction of two dissimilar materials.



Plan

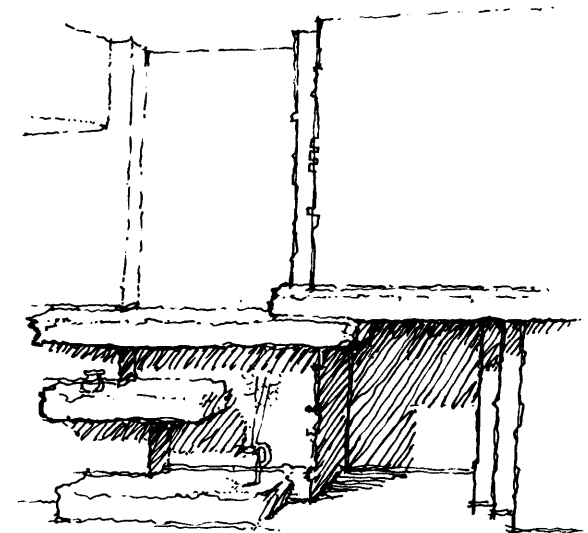


SPATIAL ZONES BUILT WITHIN THE SAME MATERIAL



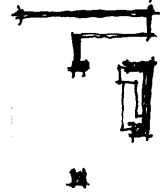
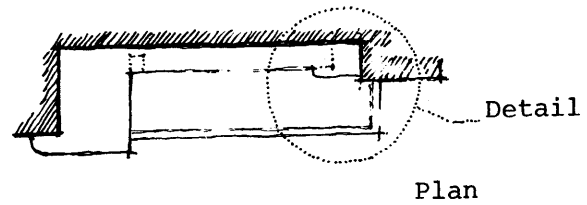
STONE FIREPLACE
Second Level Bedroom

Depth is increased by moving
out and in.

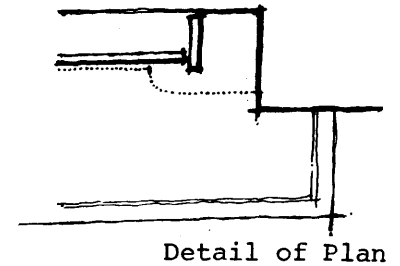


Several places of different
dimensions are built into the
fireplace wall.

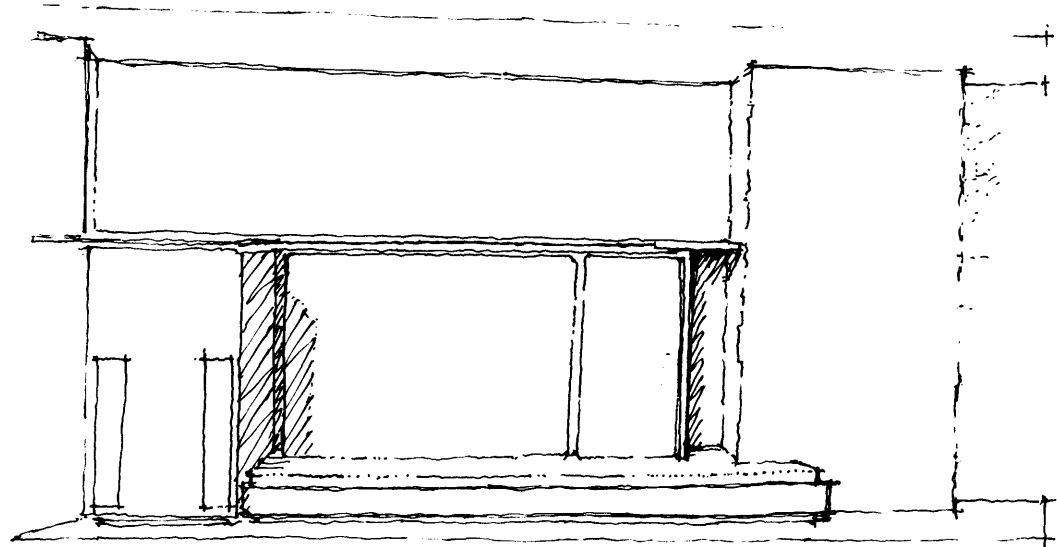
BUILT SPACE / DEPTH AT THE JUNCTION OF TWO MATERIALS

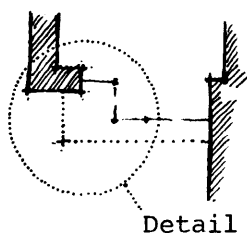


BUILT-IN BENCH AND SHELVES/ STONE PIER AND WALL

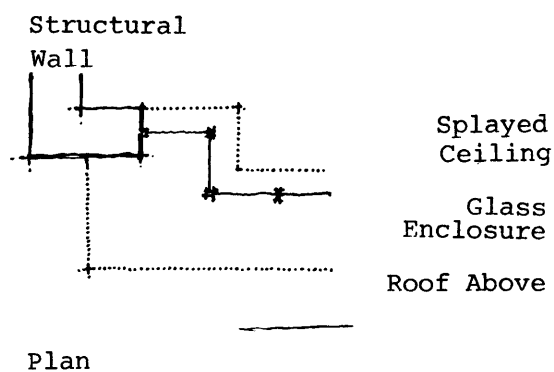


View of First Level Built-in

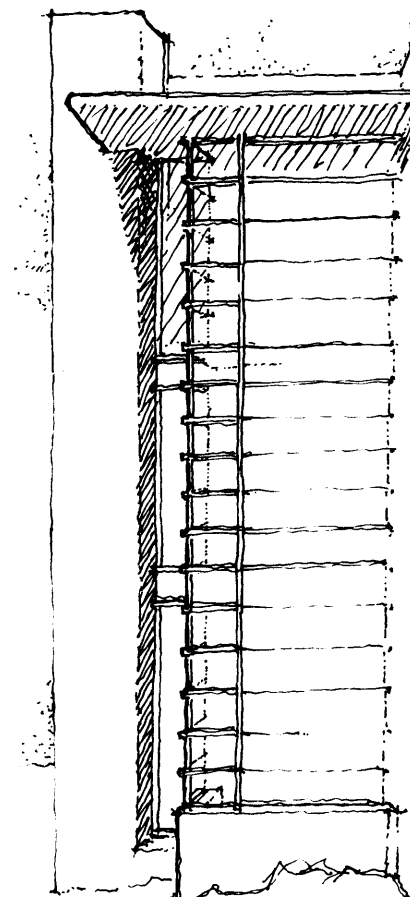




STEEL AND GLASS ENCLOSURE/
STONE STRUCTURAL WALL



The space mediates between materials (wood bench/stone pier and glass wall/stone wall) and reinforces the vertical direction of each individual element.



PROPOSAL FOR AN URBAN

INTRODUCTION

To illustrate built space in response to an urban environment, a design proposal for a site in downtown Boston is utilized. The proposal is the result of a previous design studio and is used as a context to develop and explore spatial issues. The proposed site is the empty block adjoining the Blackstone Block off Congress Street in Government Center. The program is a mixed use development which includes:

- Retail on the ground floor
- Housing/or office above
- Public theater

LANDSCAPE

DOCK SQUARE

The previous design solution is shown in Appendix B.

The intent is to rethink/ explore specific pieces of the design with an emphasis on the spatial characteristics of the place.

The same use of size/setting category used to observe Fallingwater is maintained. In this case, though, the large (landscape/site) and small (material) extremes of scale are concentrated on as the framework for the sketch problems.

LANDSCAPE

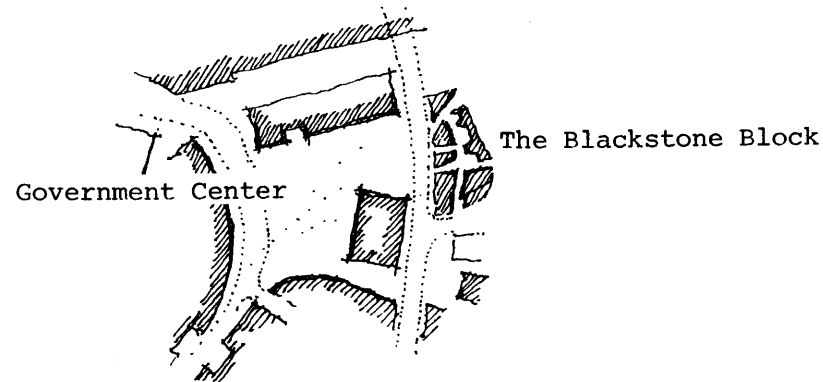


Unlike the open and horizontal space of the natural environment, the space built in the urban environment is more contained and vertical. Outdoor public space is typically defined by the walls of buildings. The edge zone of buildings are usually minor (if they exist at all) providing a rather abrupt boundary between inside/outside and private/public.



The outdoor spaces of downtown Boston range in size from the large open space of Government Center to the more intimate contained spaces found within Beacon Hill, the Blackstone Block, and the North End.

Both types of spaces co-exist reinforcing the experience of each individual space by contrast. Moving from the large open space to the smaller contained spaces, one is made more aware of the distinctive spatial characteristics of each.



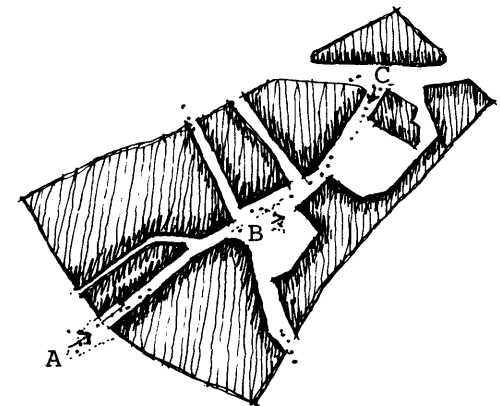
MOVING IN

Numerous references can be found in the public space of Boston.

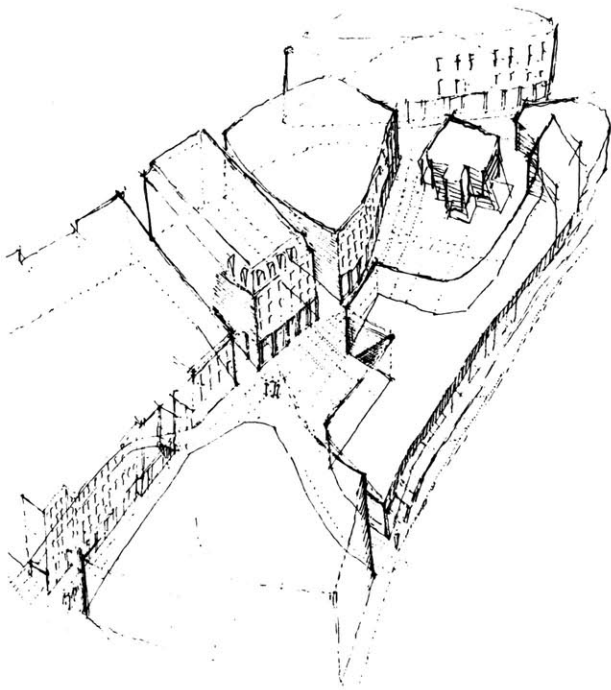
The internal space of the Blackstone Block is used as reference for several reasons. First, the size and variety of the spaces are in strong contrast to the Government Center space (although more of it would be better.) Also, the space is rich in spatial contrasts as one moves through its narrow paths and courtyards.

The pattern of moving through a contained space to an open space through yet another

contained space to reach a destination (open space) is used as a diagram for the design of the movement into the theater.



Plan of Blackstone Block



View A.
From North Street



View B. Inside the Block



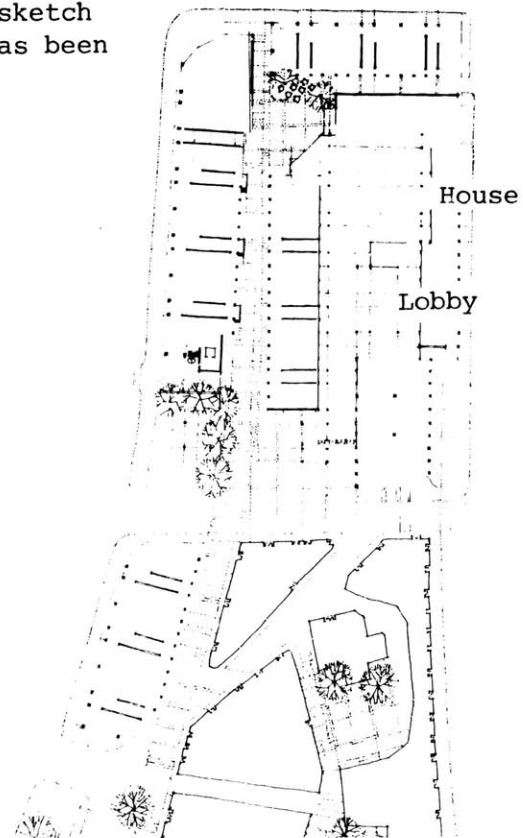
View C. From Marshall Street

SITE

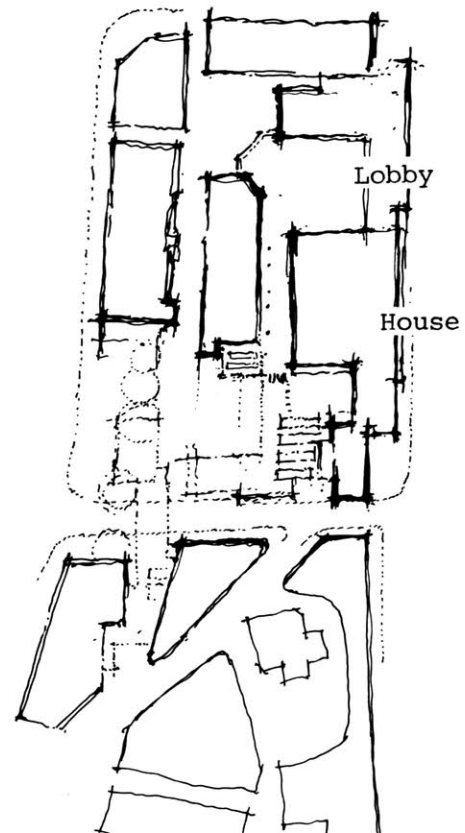
The following issues are addressed in the design proposal.

- Engaging the movement of the Blackstone Block.
- Engaging the City Hall Plaza space.
- Transforming the movement diagram of the Blackstone Block into the movement into the Theater.
- Continuing all street edges and using the internal space for the theater.

As a base for the sketch problems, the diagram has been revised.

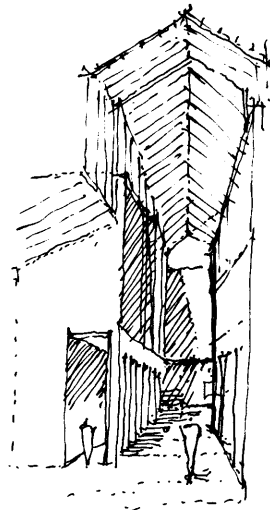


Previous Design (MAY 1983)



Revised Diagram May 1984

MOVING IN



Transition into Theater
(Previous Design)

SKETCH PROBLEM I

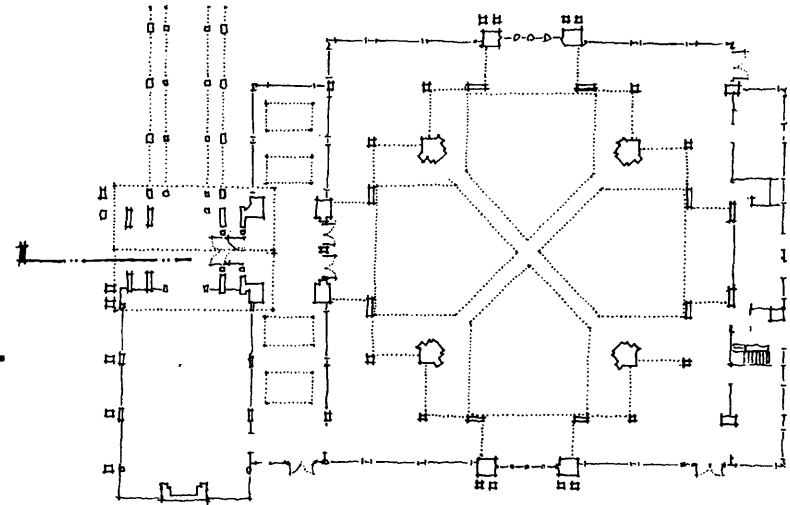
In the original solution, the movement (entry space) into the theater was a continuation of the public outdoor space. Therefore, it was designed to be a single type of space covered only by glass. This solution allowed no real transition from the outdoors into the theater. Although it seems a sound idea to continue characteristics of the outdoor space to the inside, it seems more positive to enrich the quality (sense) of entering with spatial variety.

REFERENCES

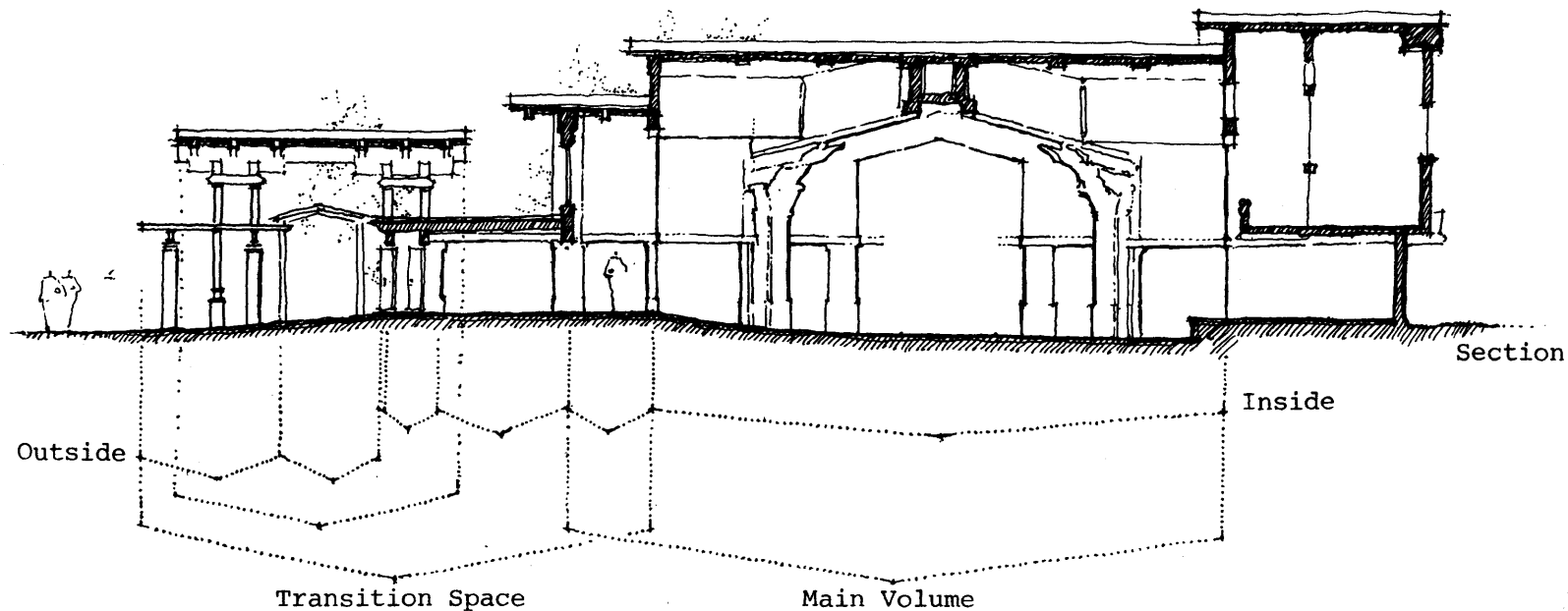
As a preface to the sketch problem, two places were examined. Each was analyzed in terms of the spatial zones which define the entry sequence.

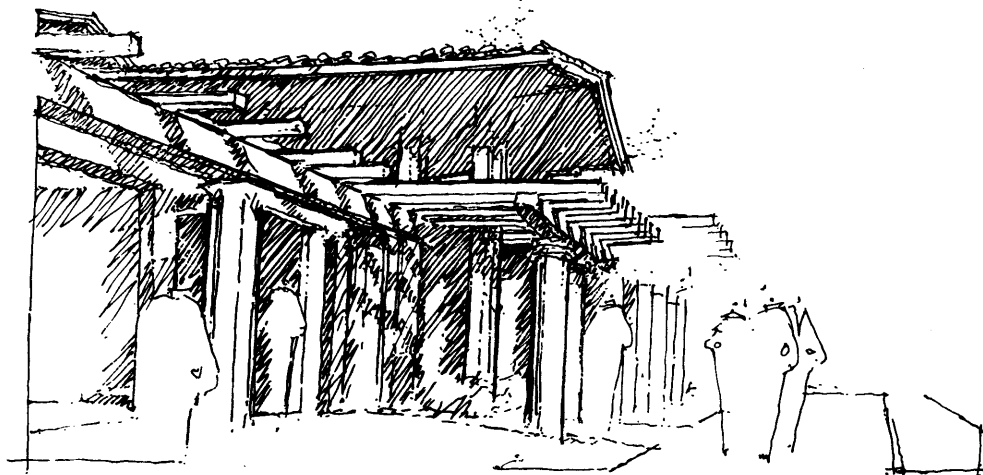
Overlapping Spatial Zones

First Church of Christ, Scientist Berkeley, California, 1910
Bernard Maybeck, Architect

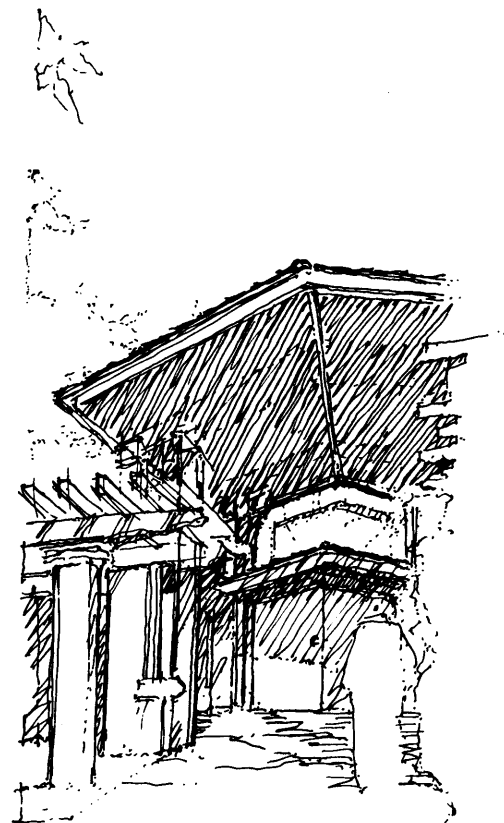


Plan

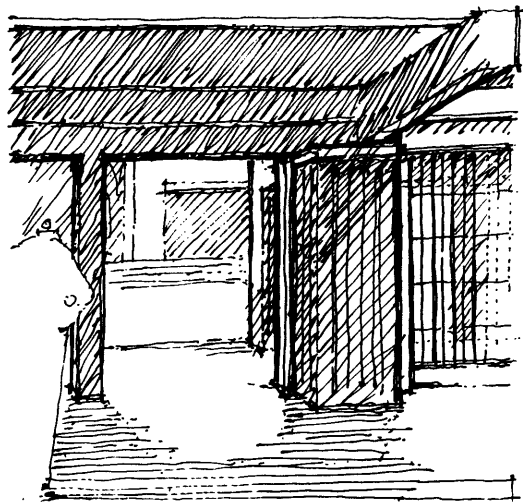




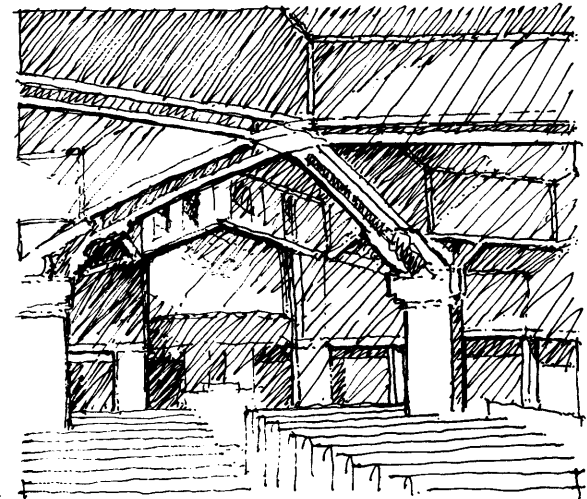
View Along Street



Light/Space Beyond Point of Entry



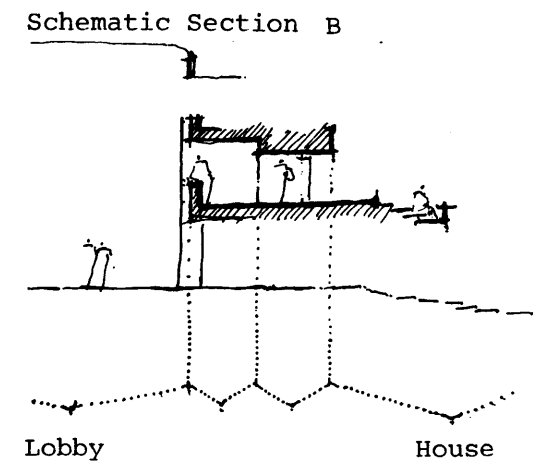
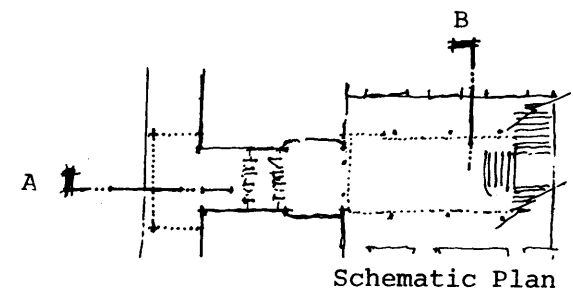
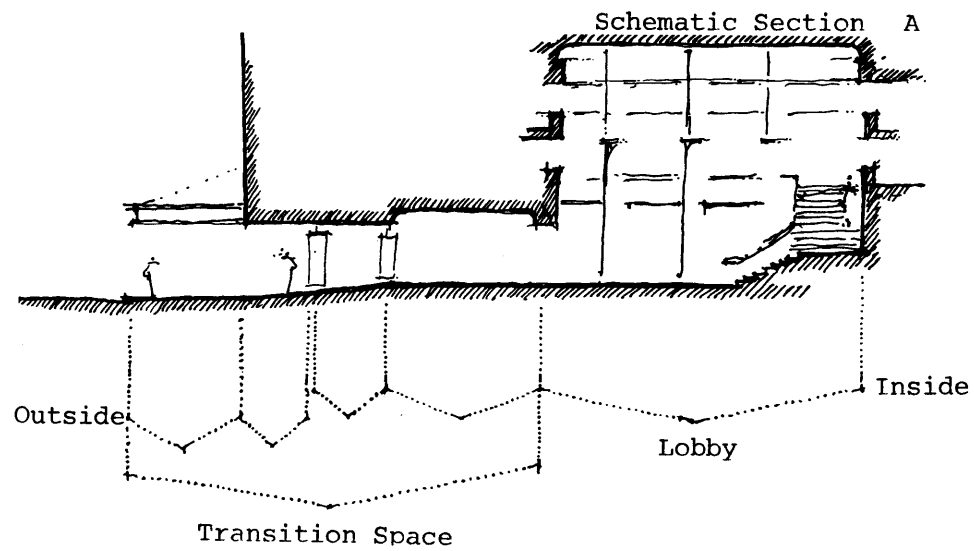
Foyer

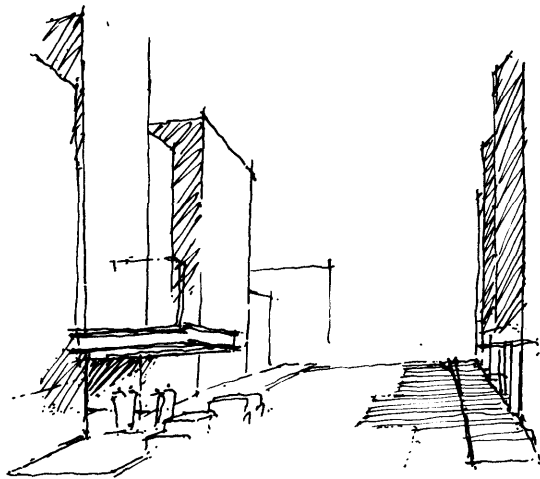


Main Volume of Church

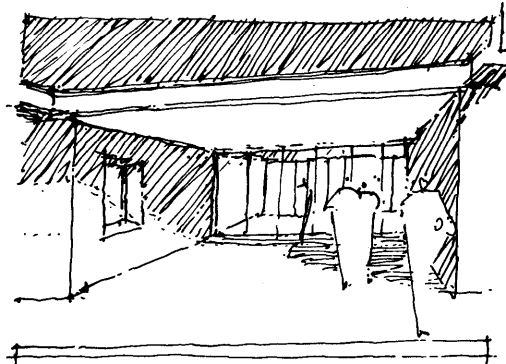
Sequential Spatial Zones

Wang Center, Boston, Massachusetts, 1925
Clarence Blackhall, Architect





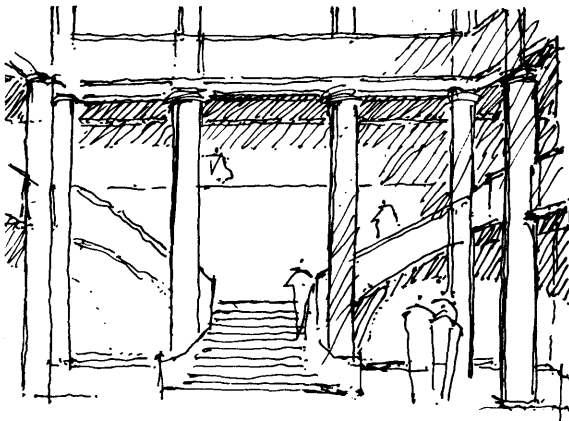
View Along Street



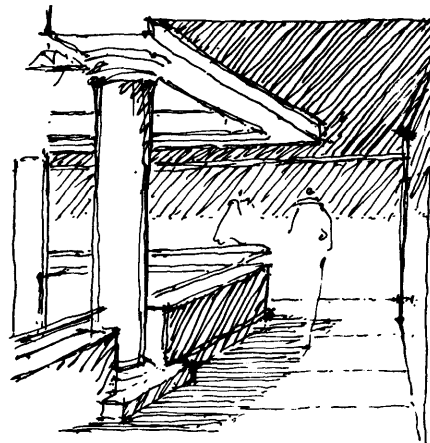
Under Street Canopy



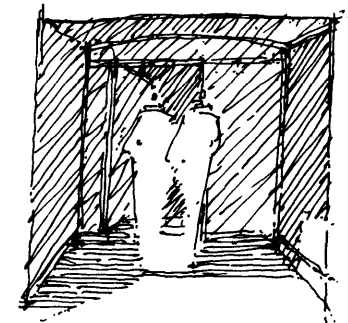
Foyer



Lobby



Lobby Balcony

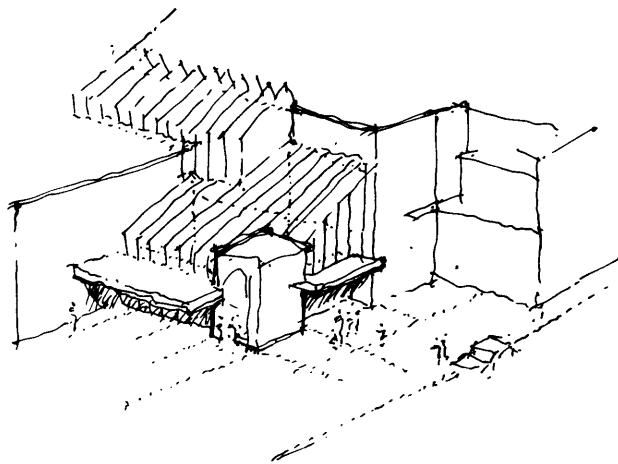


Movement from Lobby into House

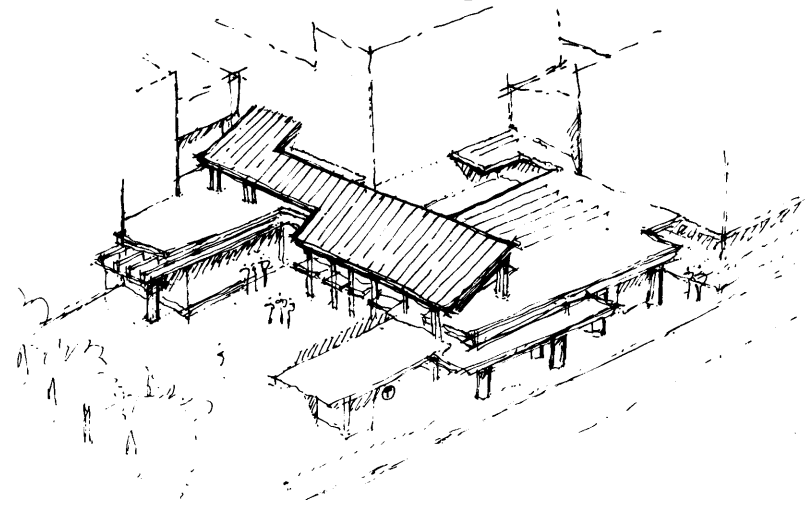
The focus of the sketch problem is the plaza and transition space which link theater and city.

The solution that follow differs from the previous proposal (May 1983 - see Appendix B) because the theater entry and the urban fabric engage each other spatially. The entry is extended to define public open space and become more of a day to day experience.

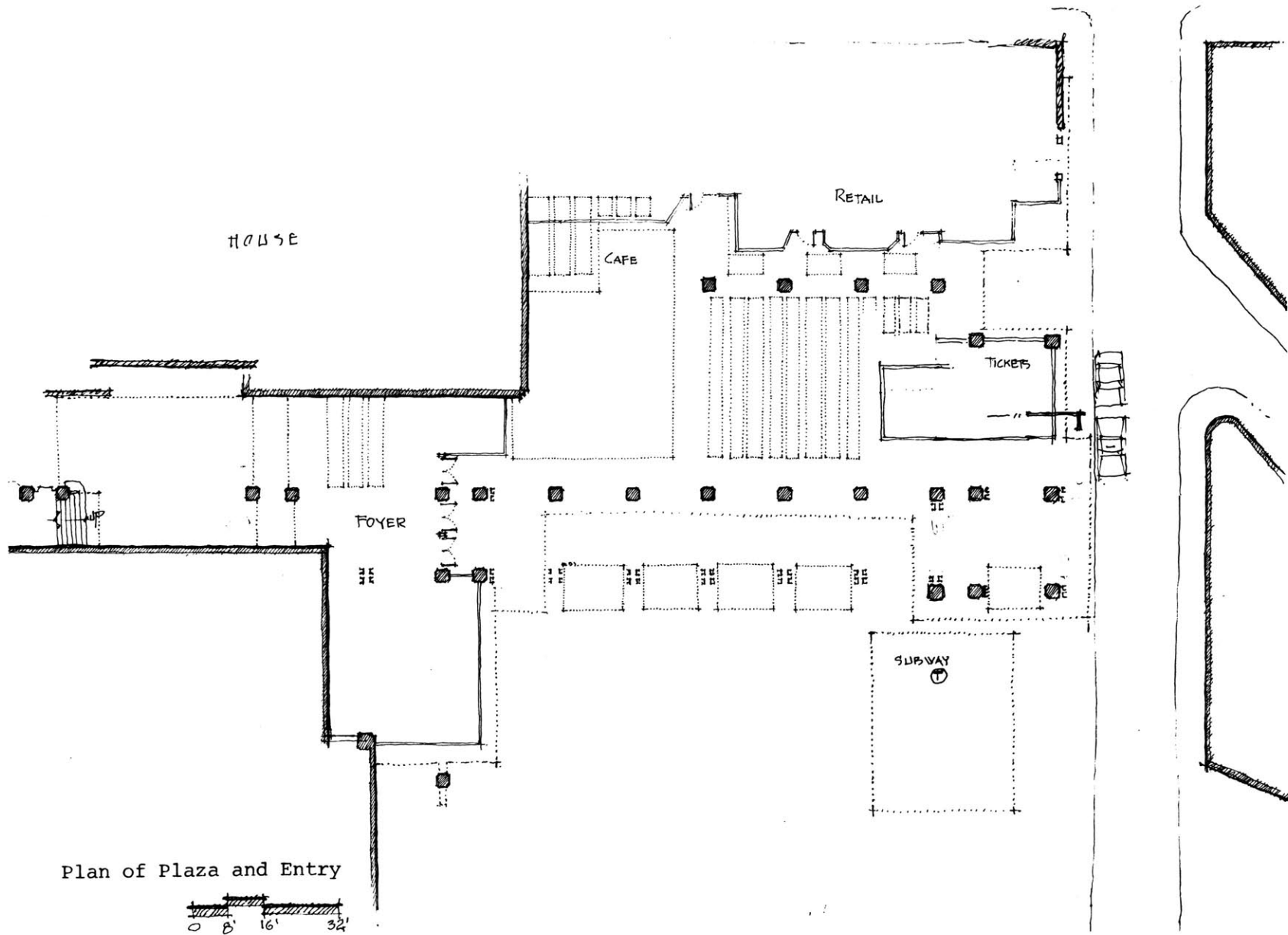
A variety of outdoor spaces are defined with varying degrees of overhead cover. These spaces/places tie in with the Haymarket subway stop and could be used by outdoor retail services (cafe), the weekly vegetable markets or by someone wishing to escape the elements.



Previous Proposal Axon (May 1983)

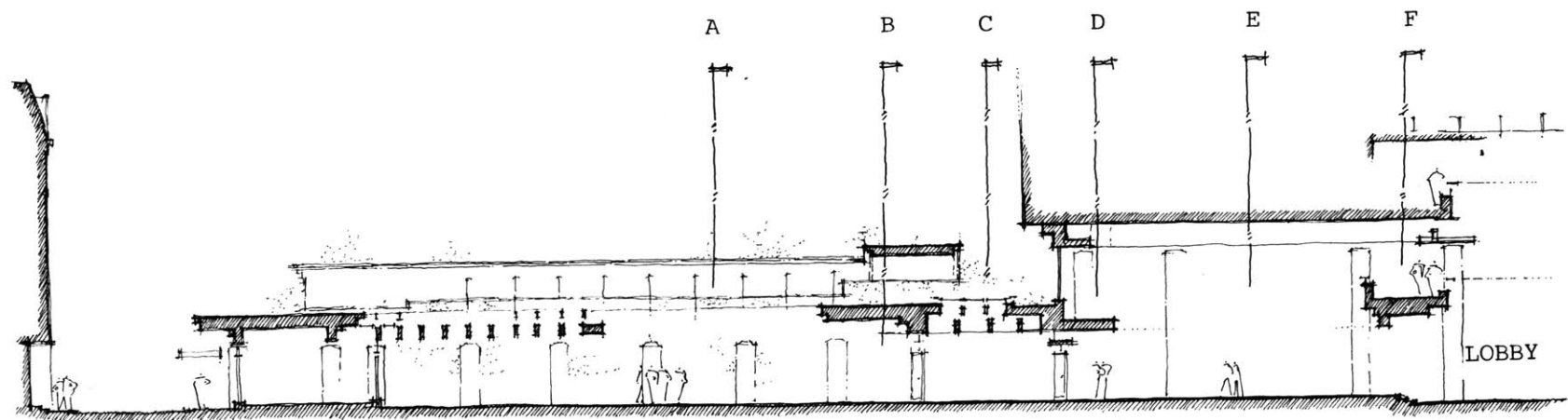


New Axon (May 1984)



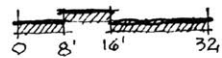
Plan of Plaza and Entry



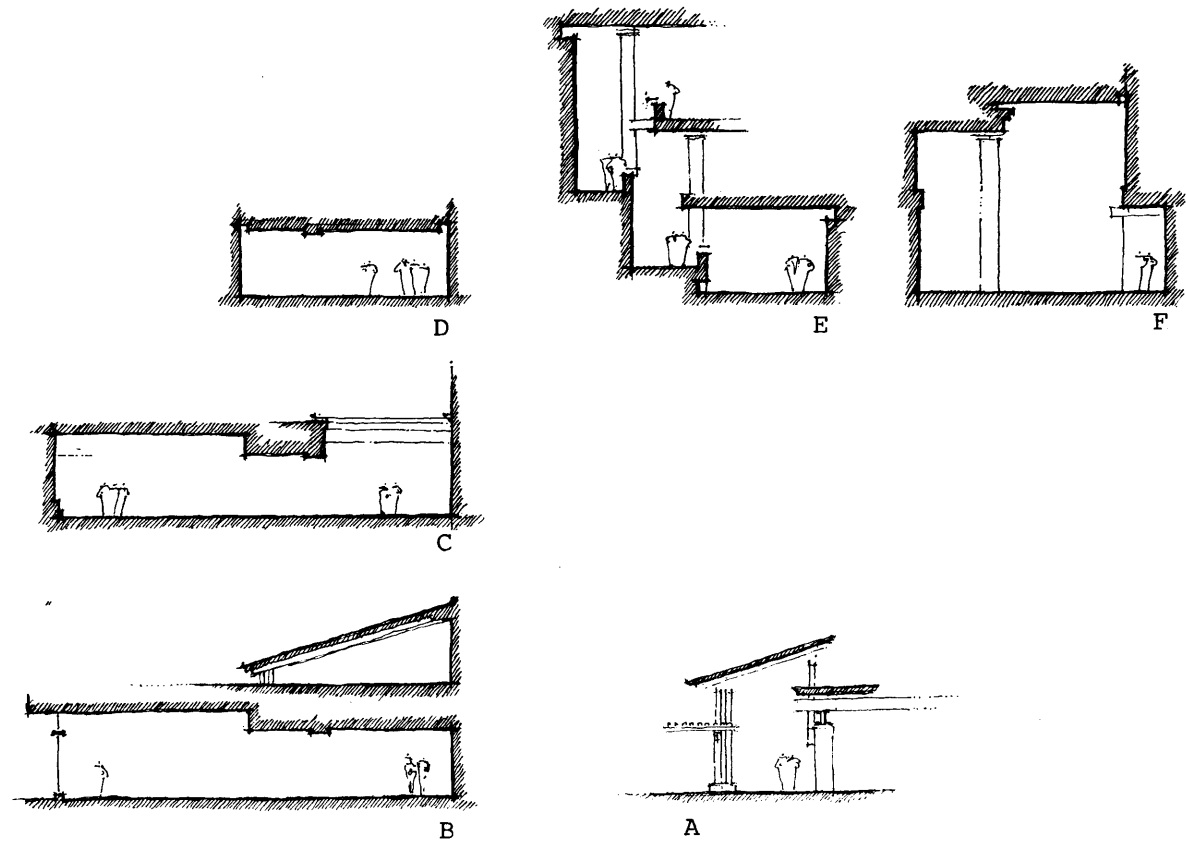
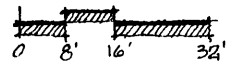


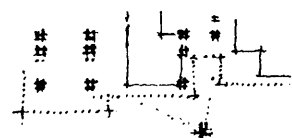
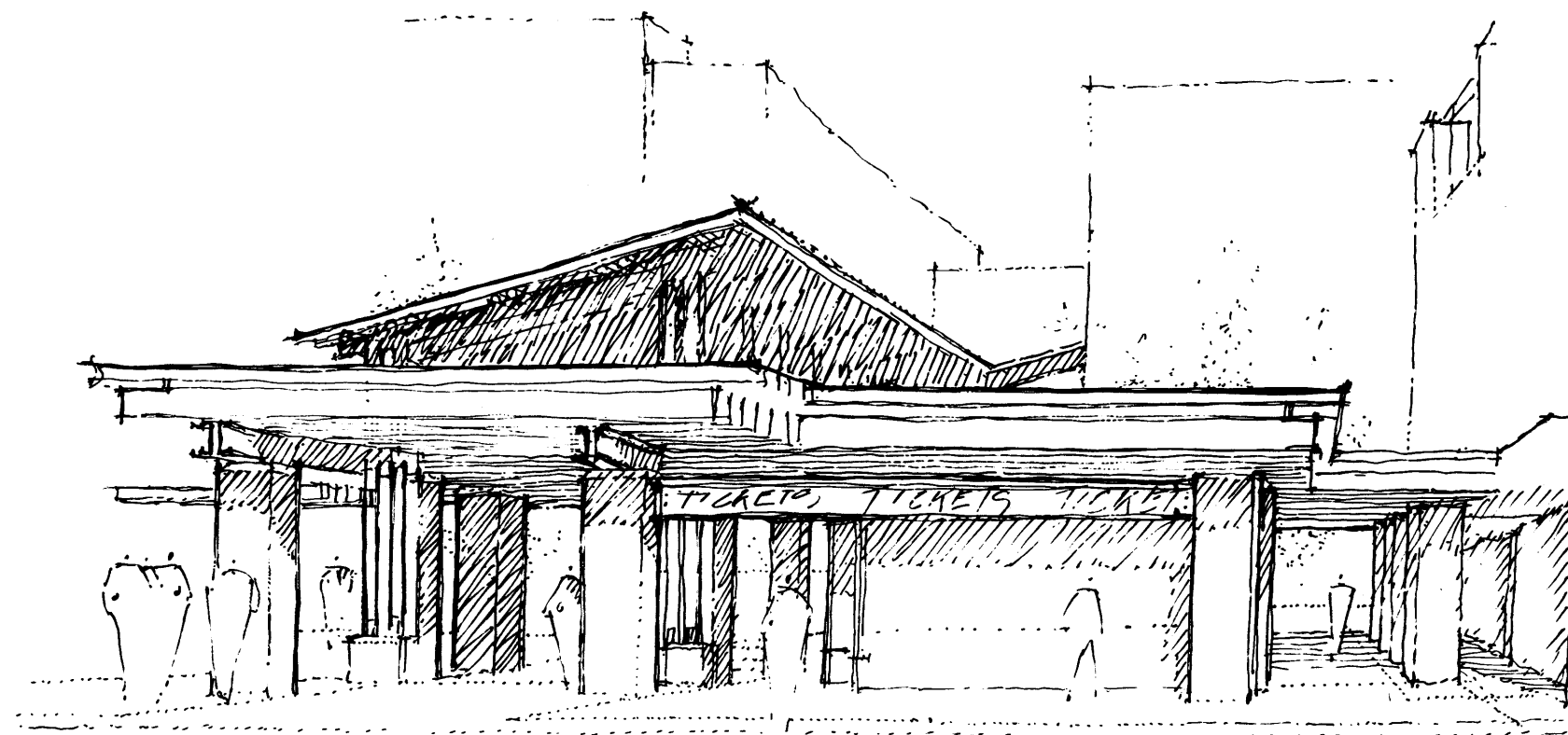
Inside Outside

Section from Street to Lobby

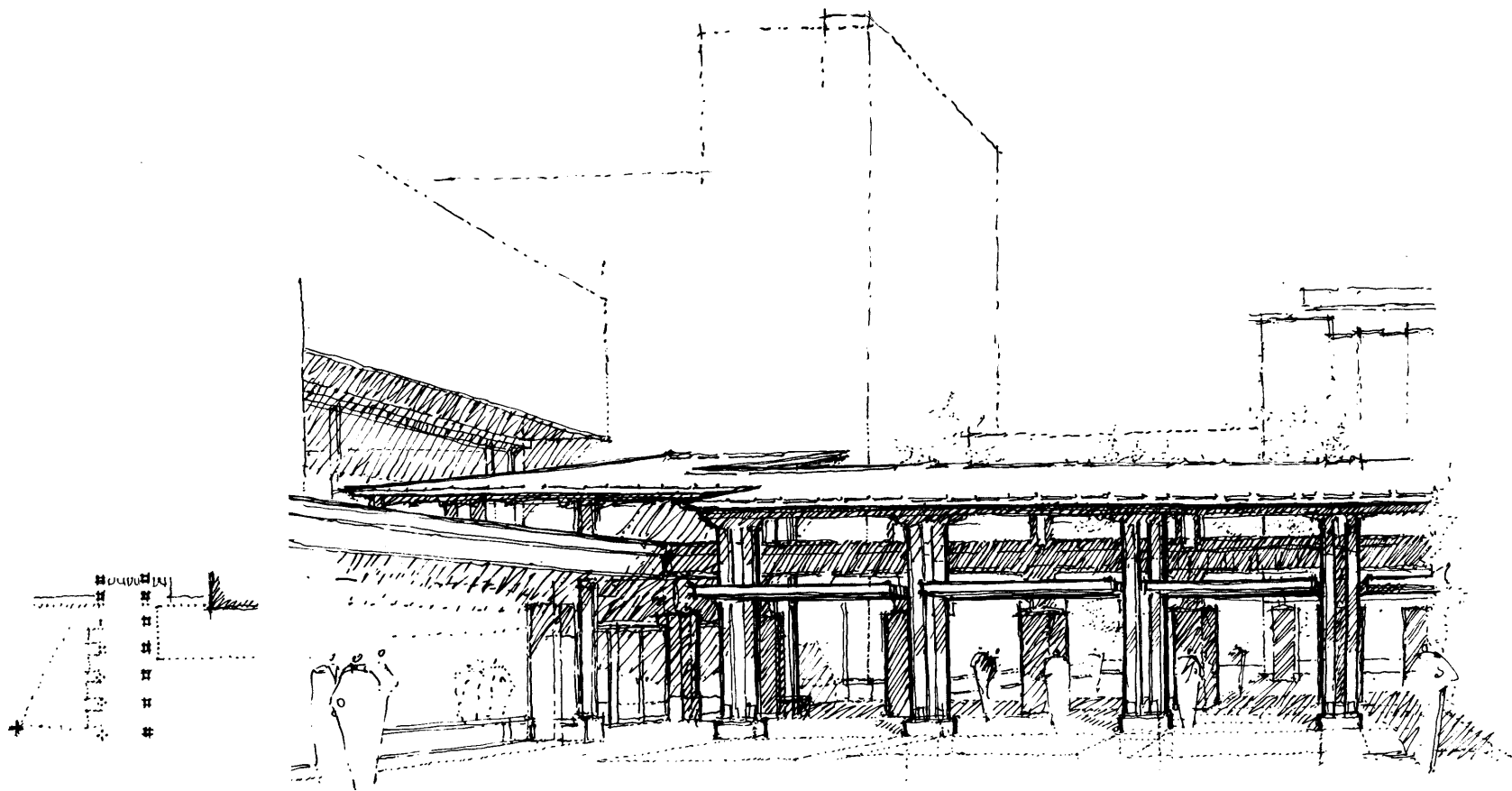


SPATIAL ZONES

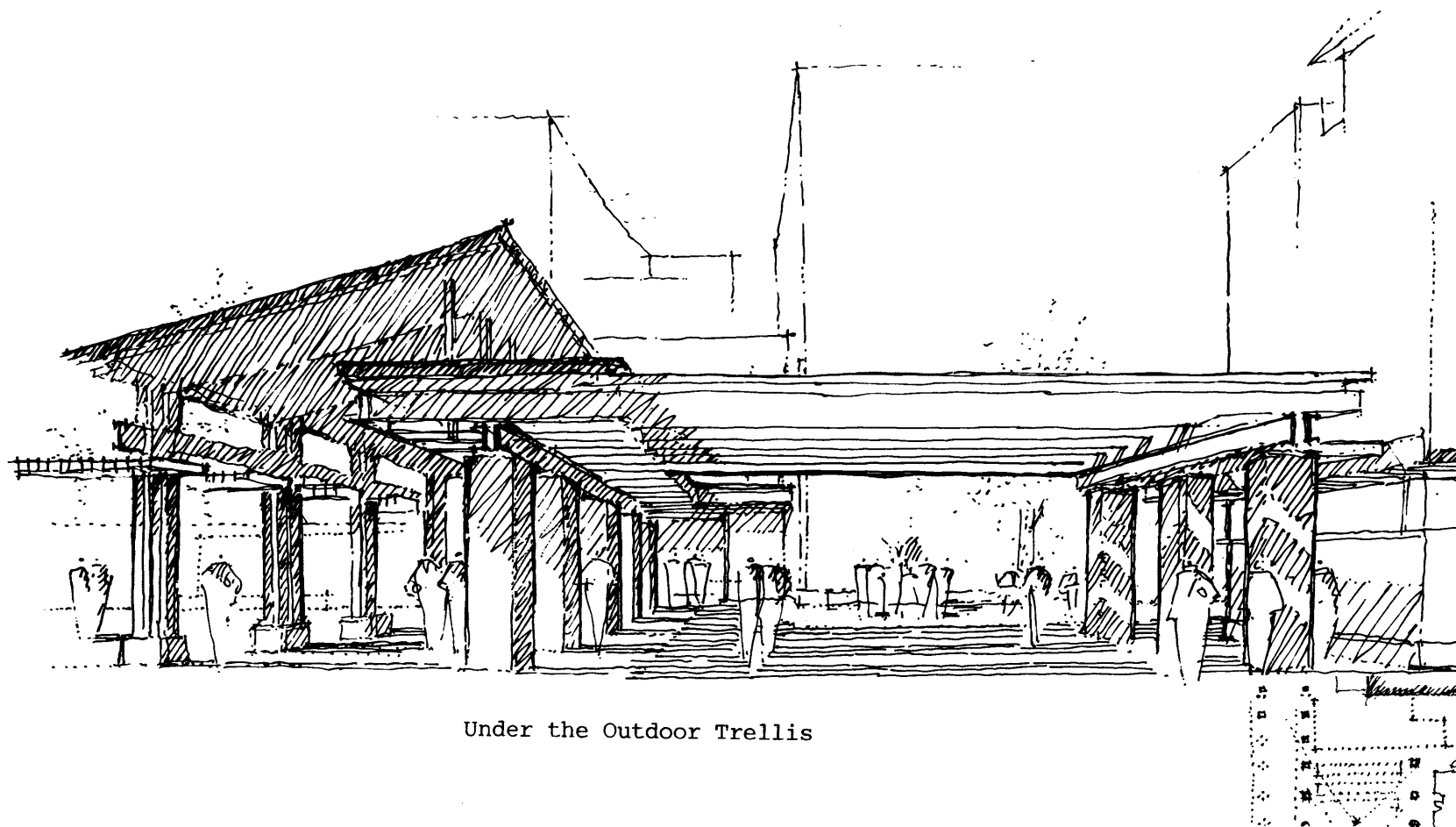




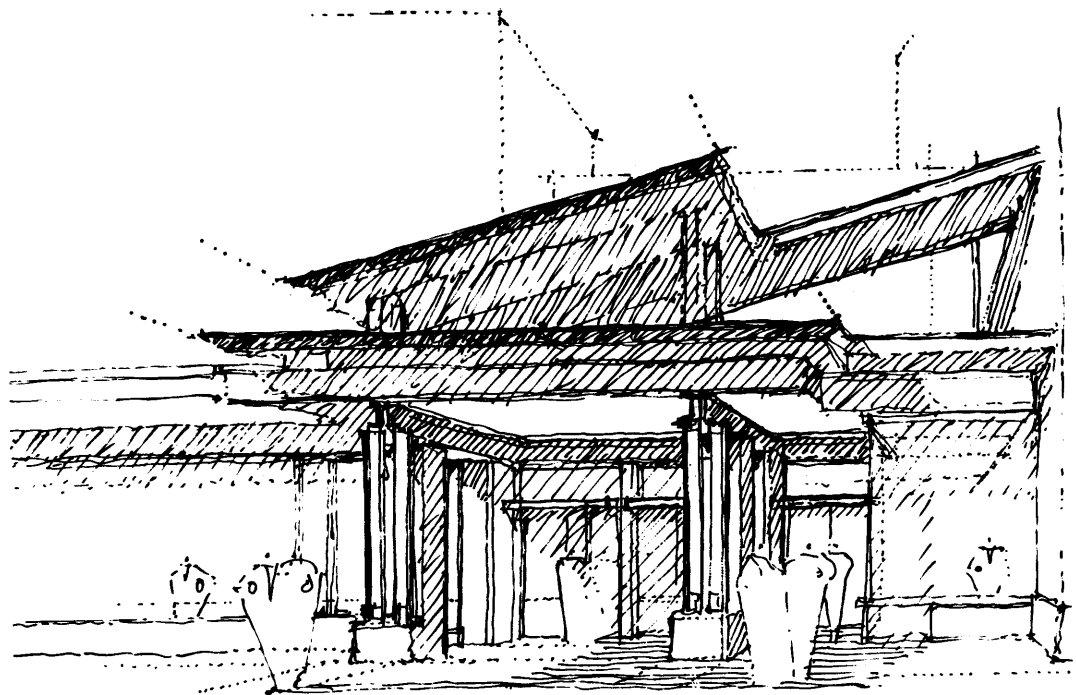
Street Entry



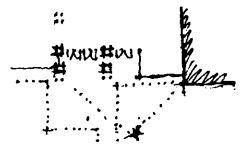
Moving in From Congress Street

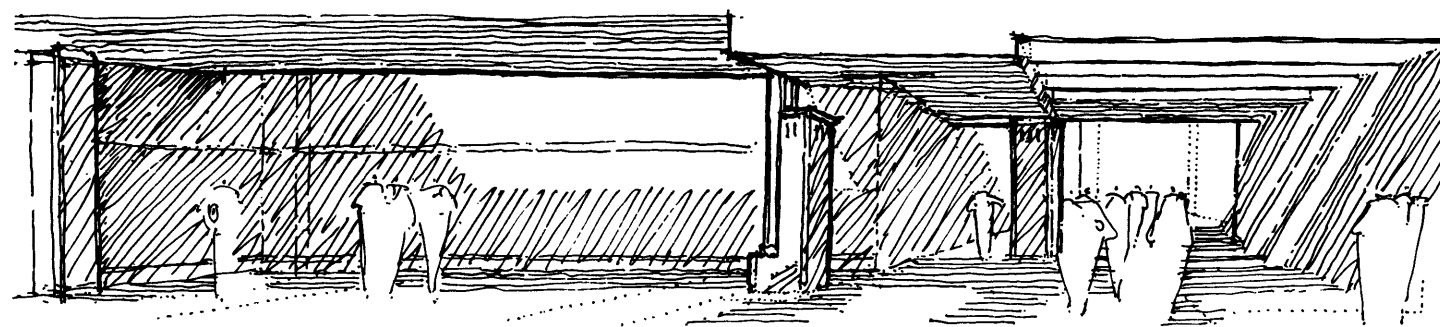


Under the Outdoor Trellis

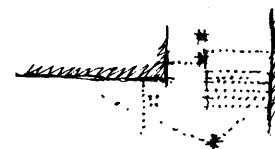


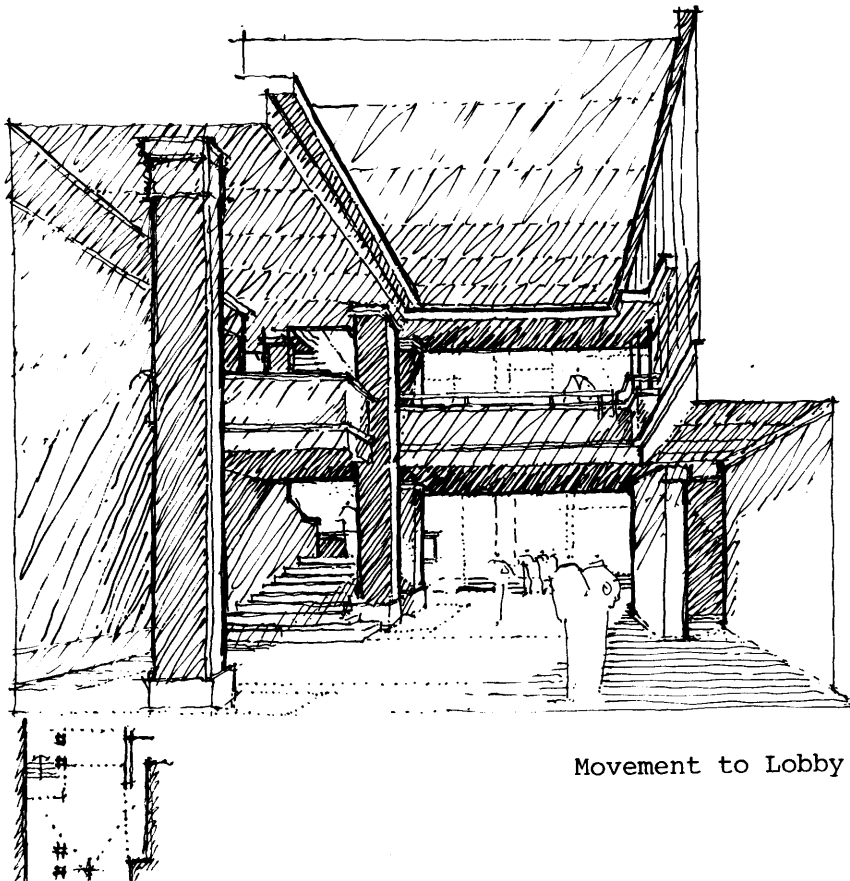
At the Point of Entry





Foyer

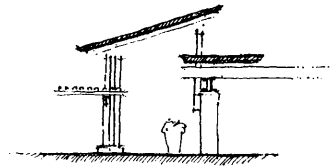




Movement to Lobby

MATERIAL

SKETCH PROBLEM II

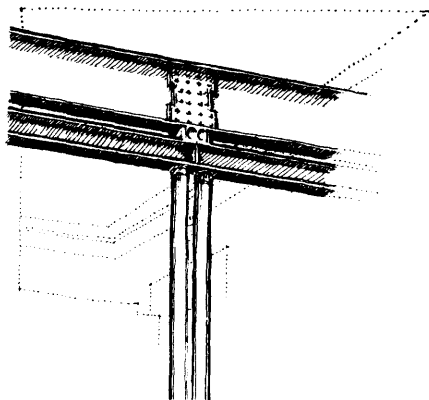


The second sketch problem focuses on built space at the junction of two materials. This is advantageous for several reasons.

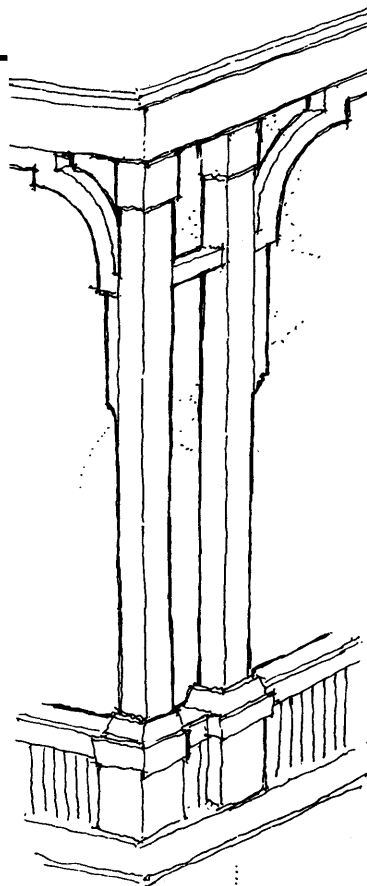
First, the use of spatial connections provides an understanding of the building process through the expression of individual building parts. Also, by building space into the form of a three-dimensional object, the dynamic quality of light will enhance the "life" of the object.

A piece of the outdoor shelter proposed in the previous sketch problem is developed further in this study.

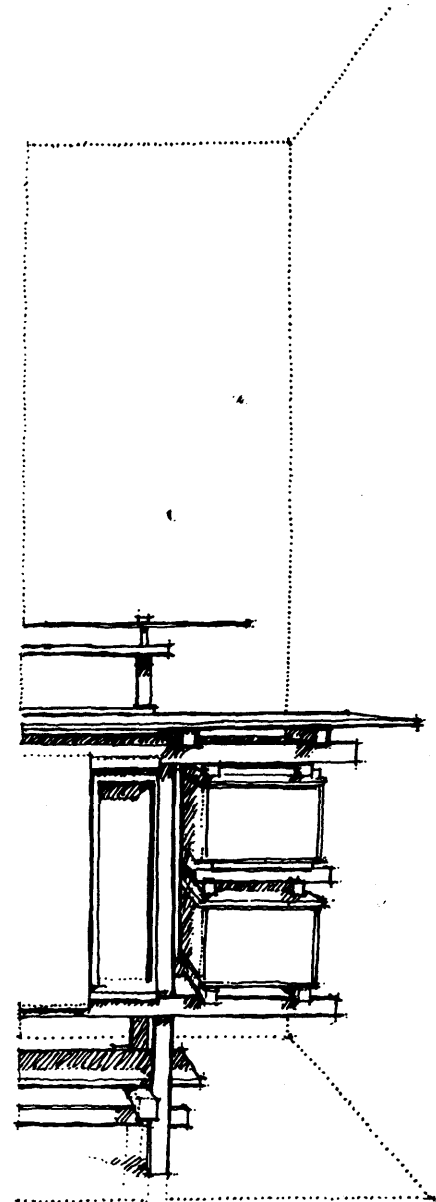
REFERENCES



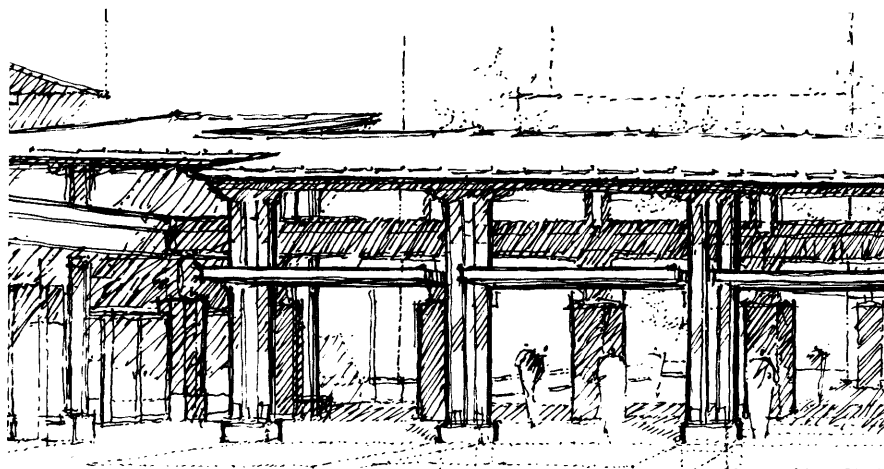
Column/Steel Beam Detail
Carlo Scarpa, Architect



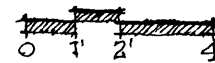
Wood Detail
Victorian House

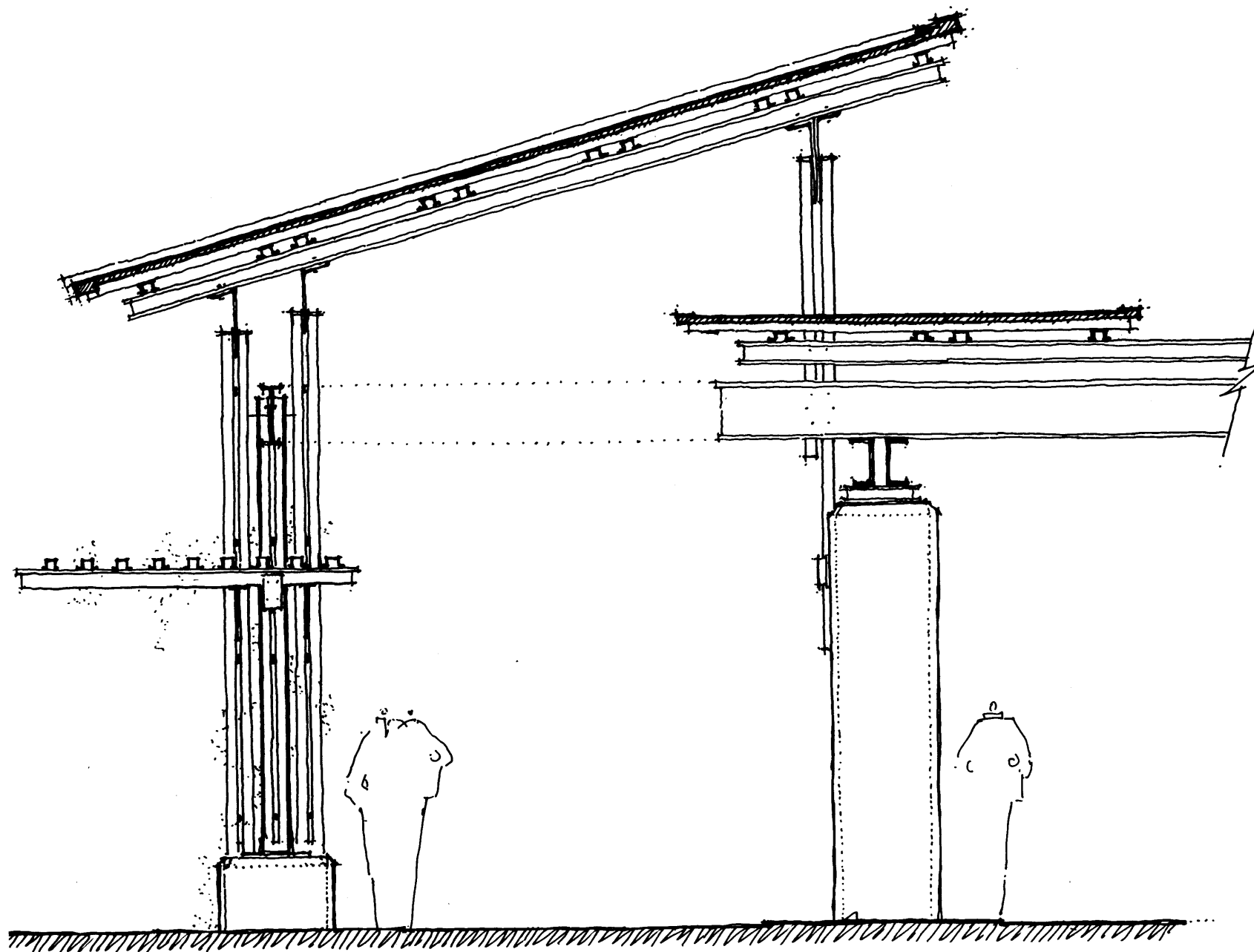


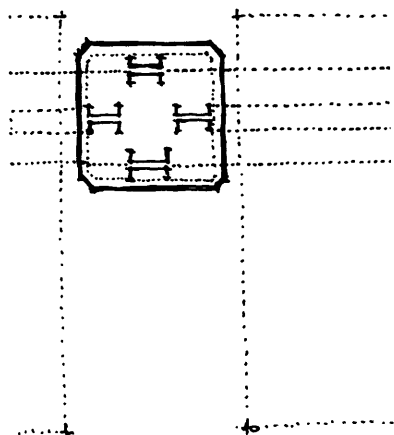
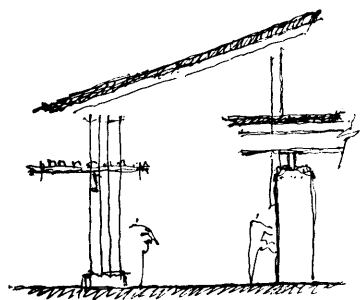
Wood Buffet
G. Rietveld, Architect



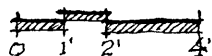
Section through Outdoor Cover



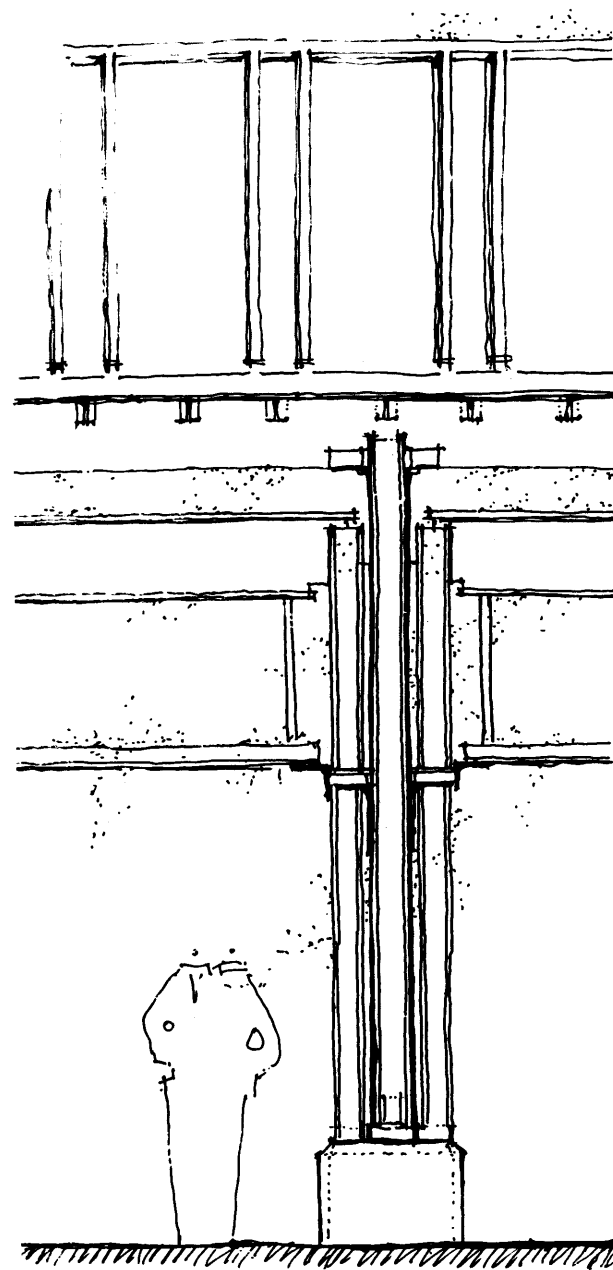


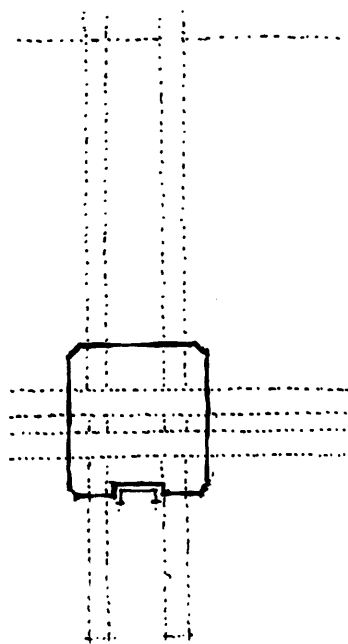
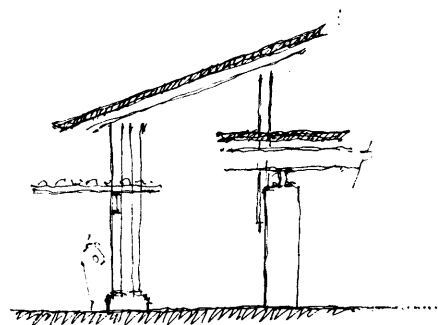


Plan of Steel Column

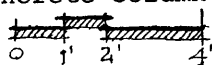


Elevation - Steel Column

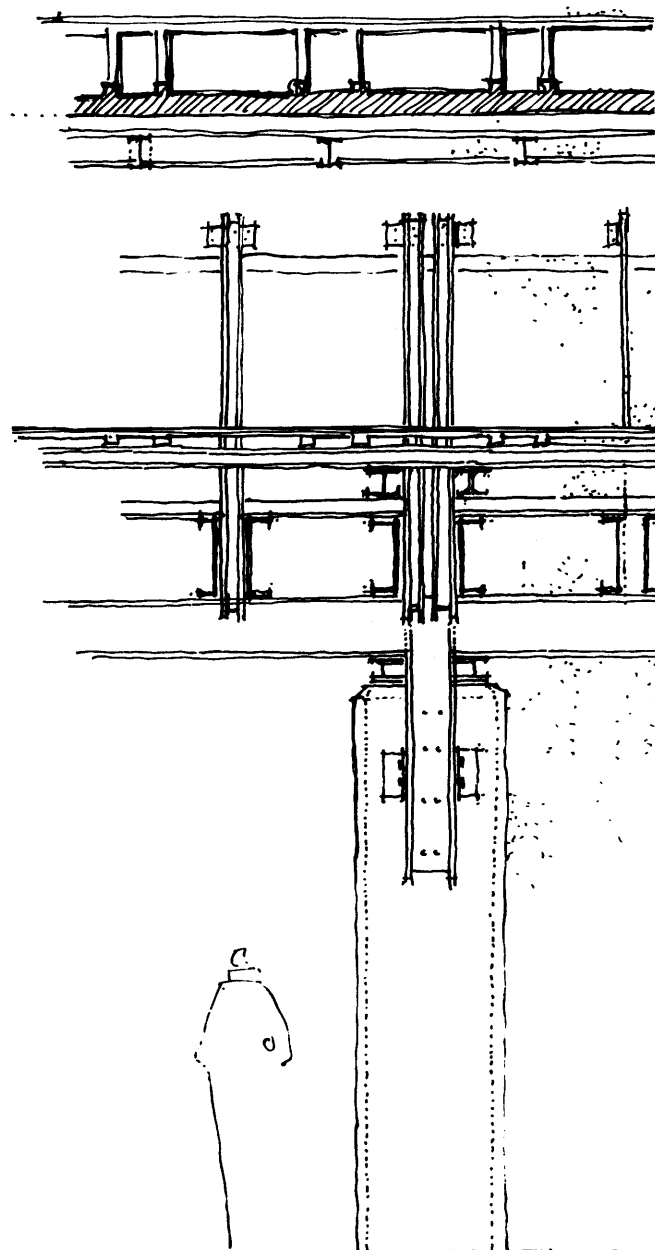




Plan of Concrete Column



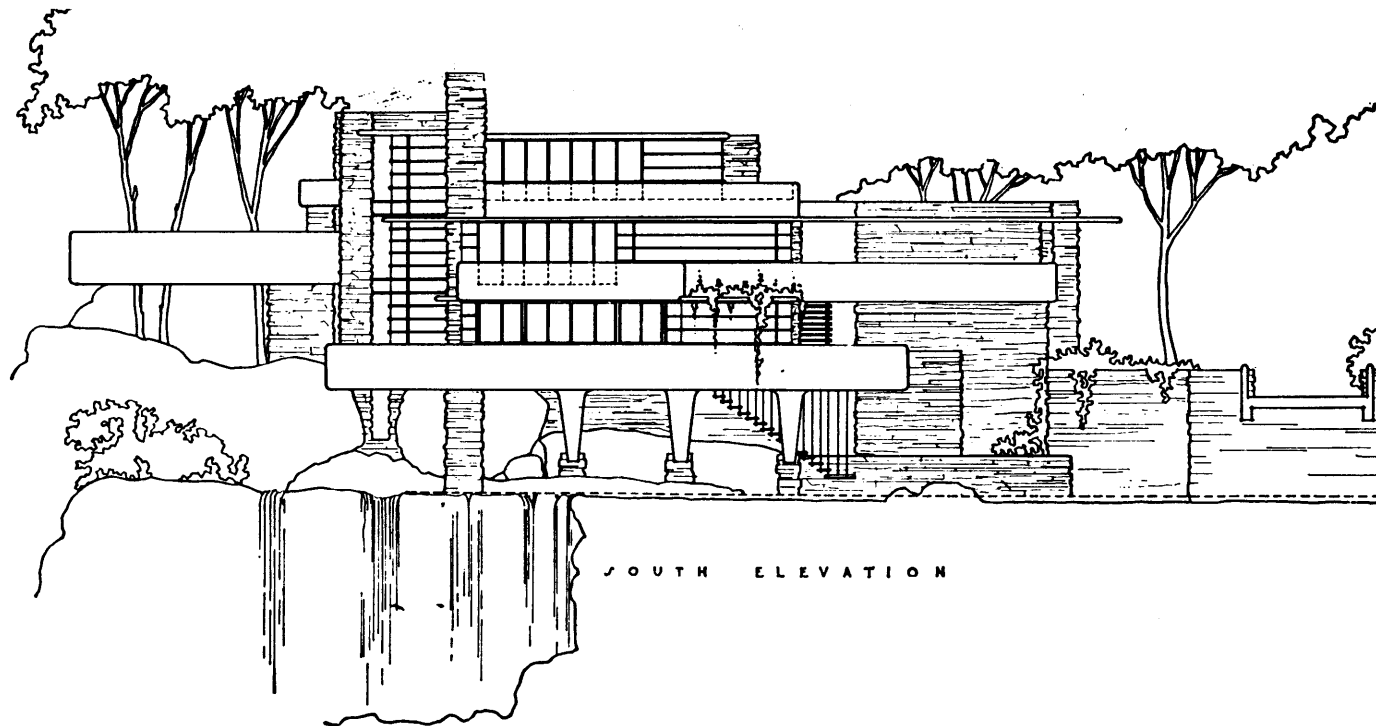
Section/Elevation - Concrete Column



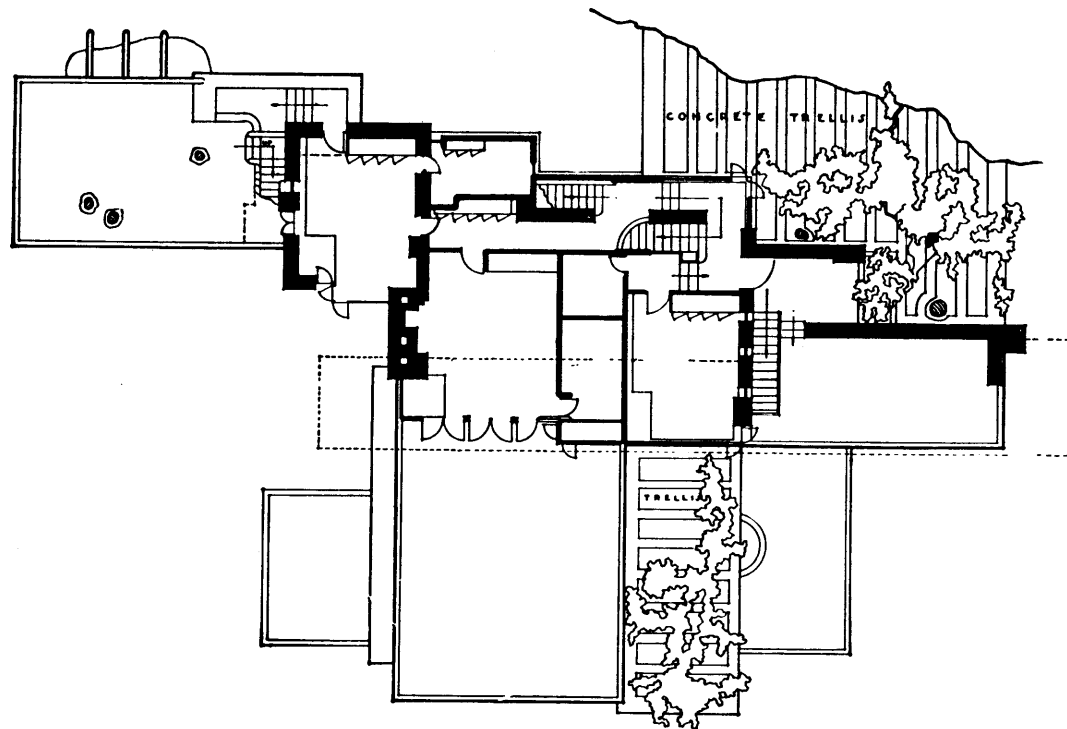
APPENDIX A

Fallingwater, Bear Run, Pennsylvania, 1938

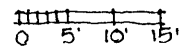
Frank Lloyd Wright, Architect

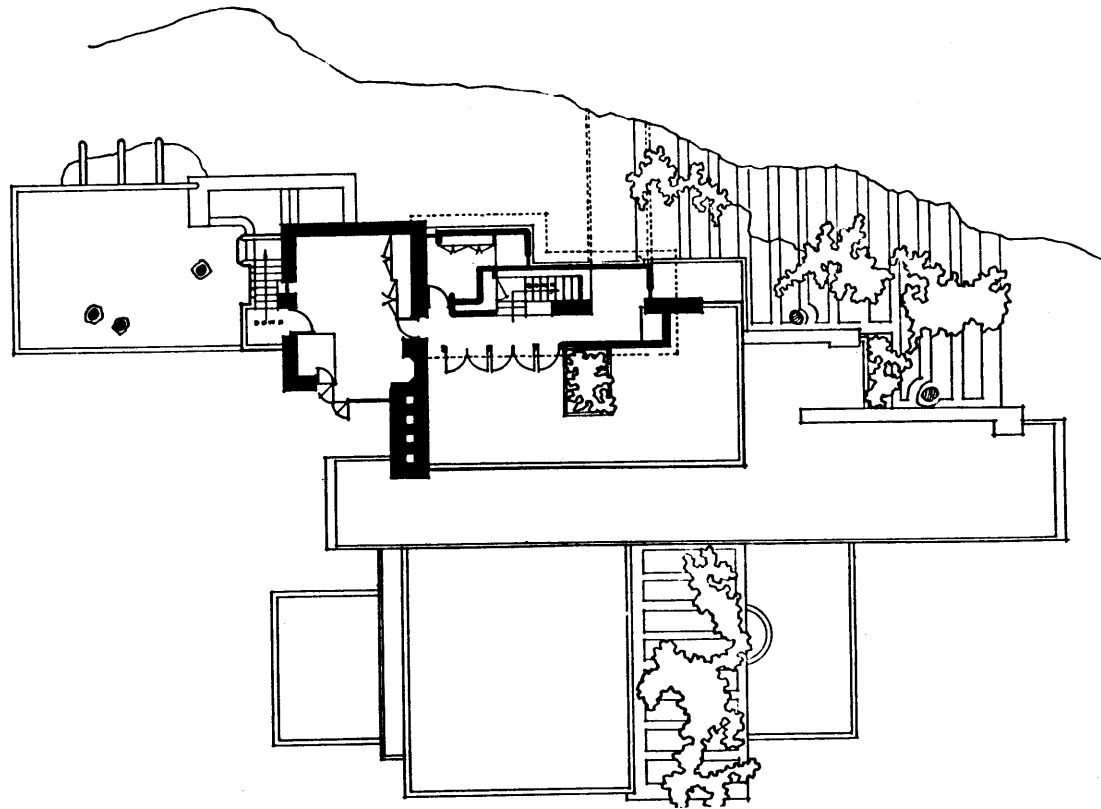


SOUTH ELEVATION

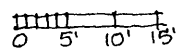


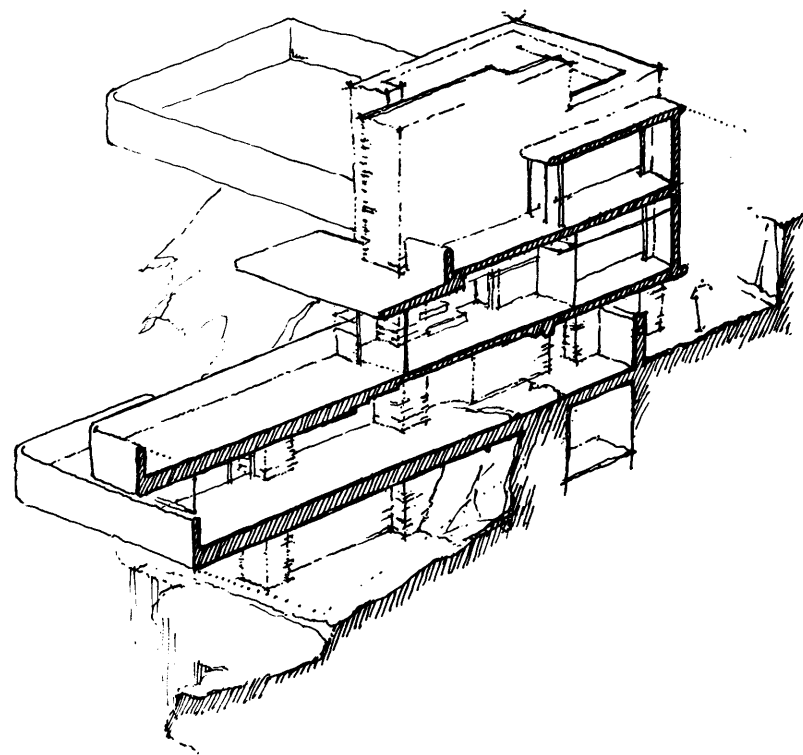
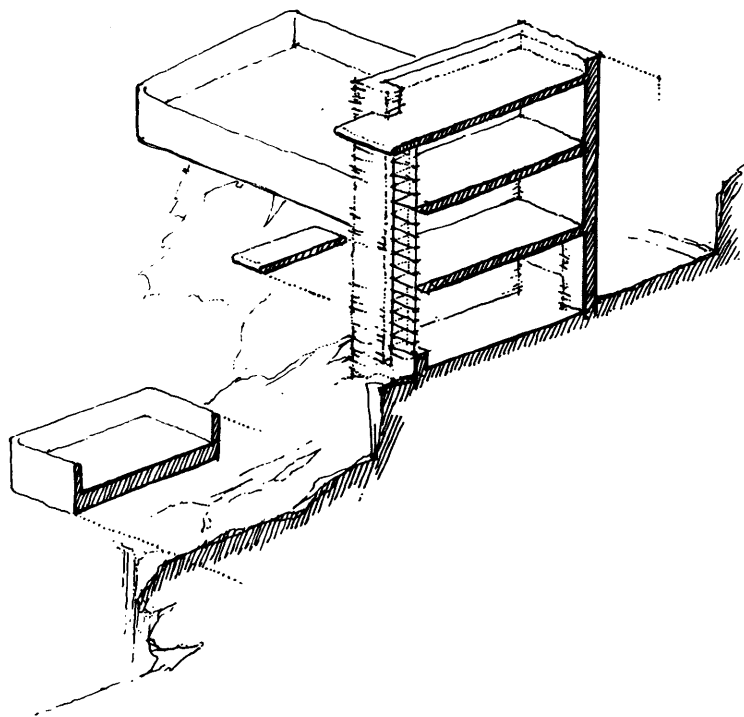
Second Level Plan



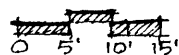


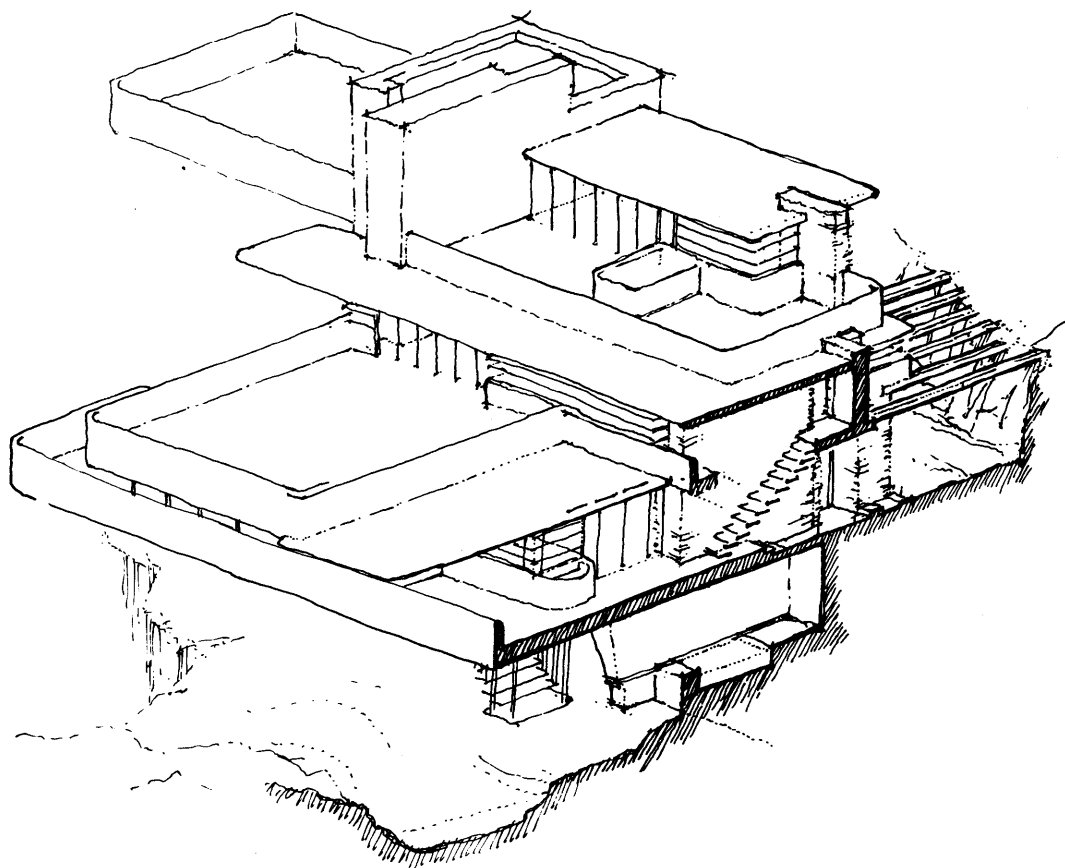
Third Level Plan

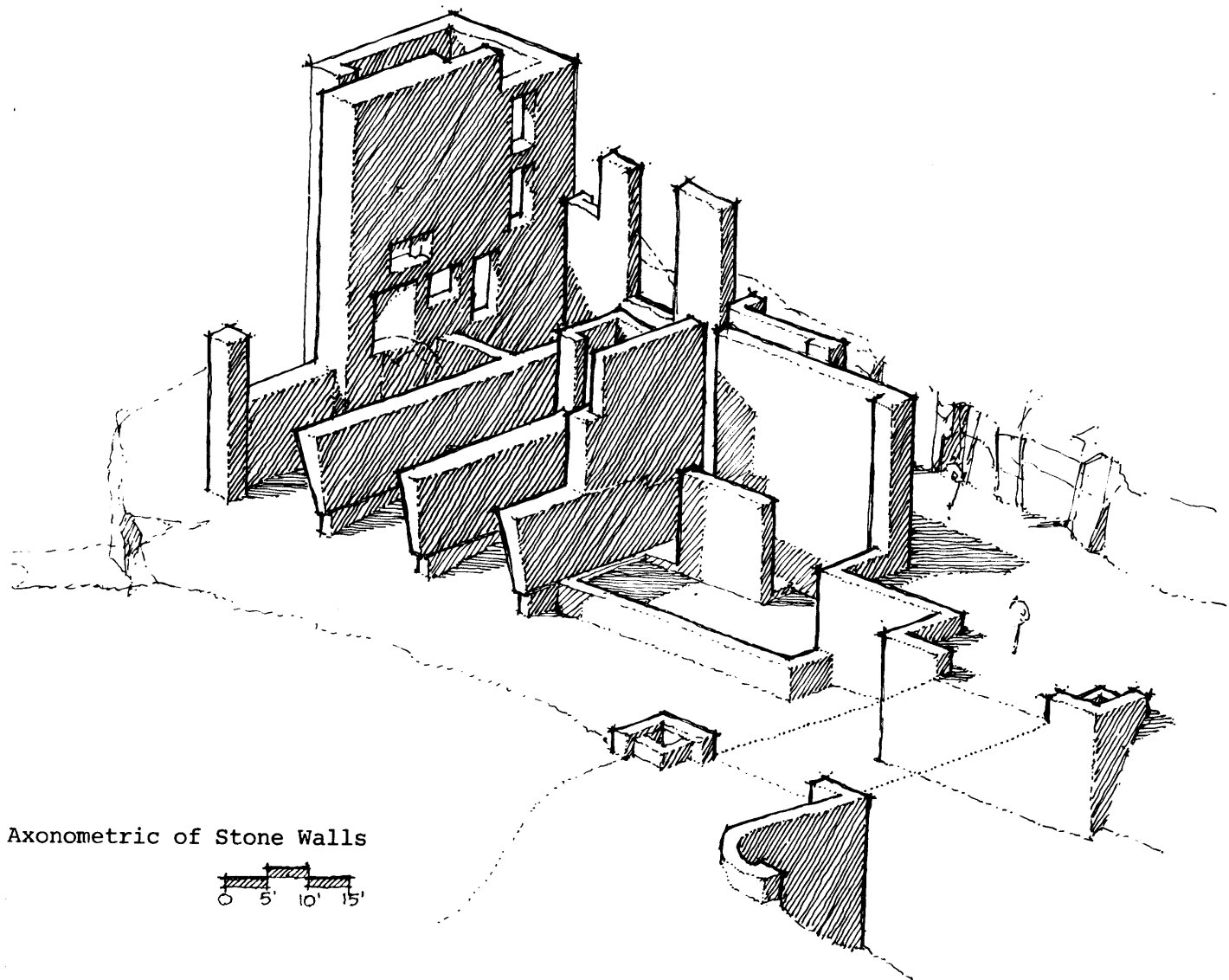




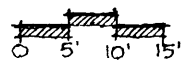
Section Axonometrics



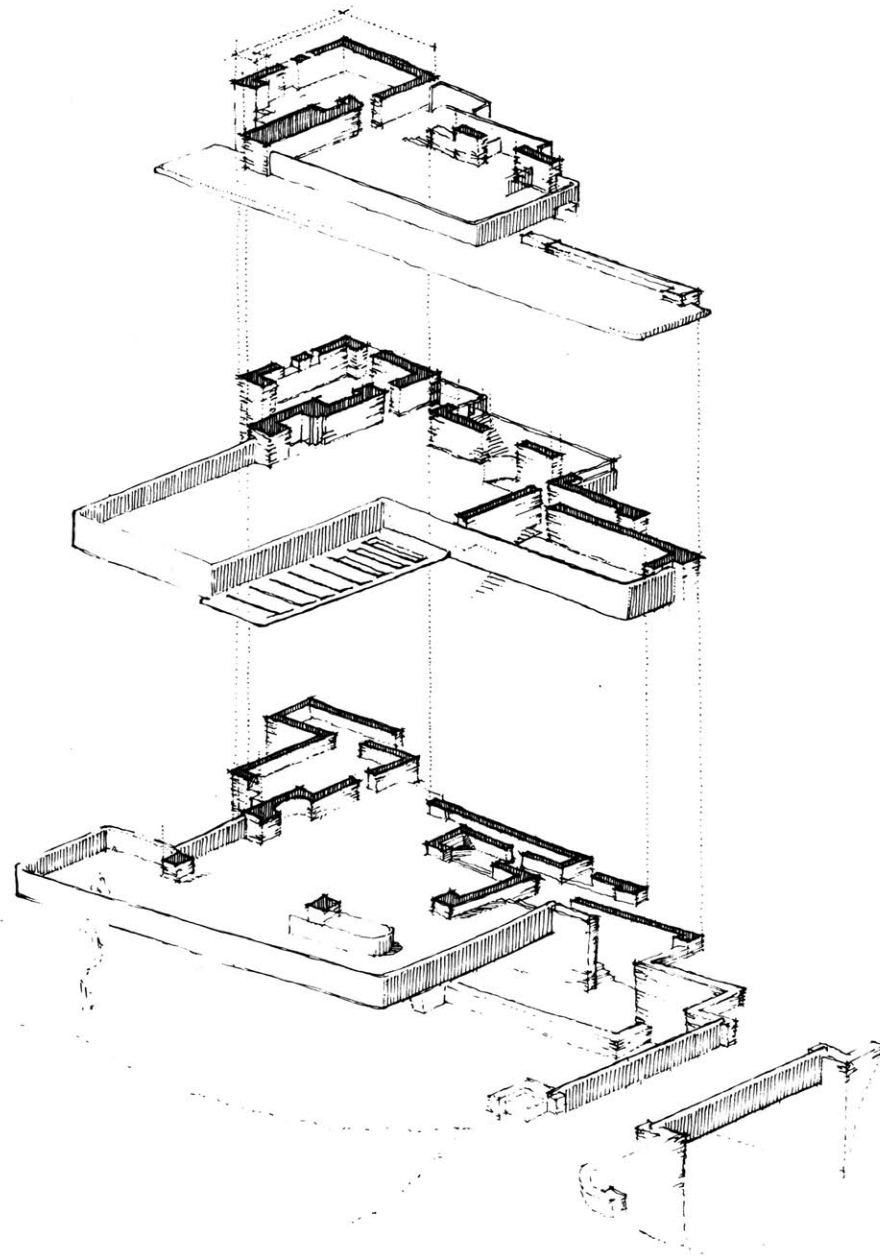
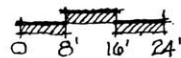




Axonometric of Stone Walls

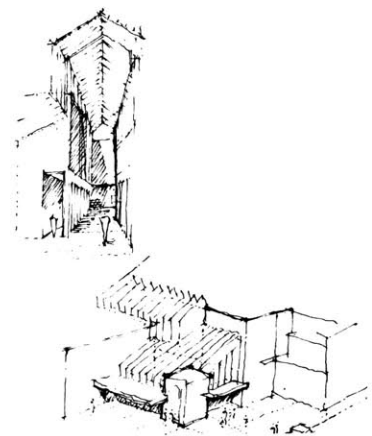


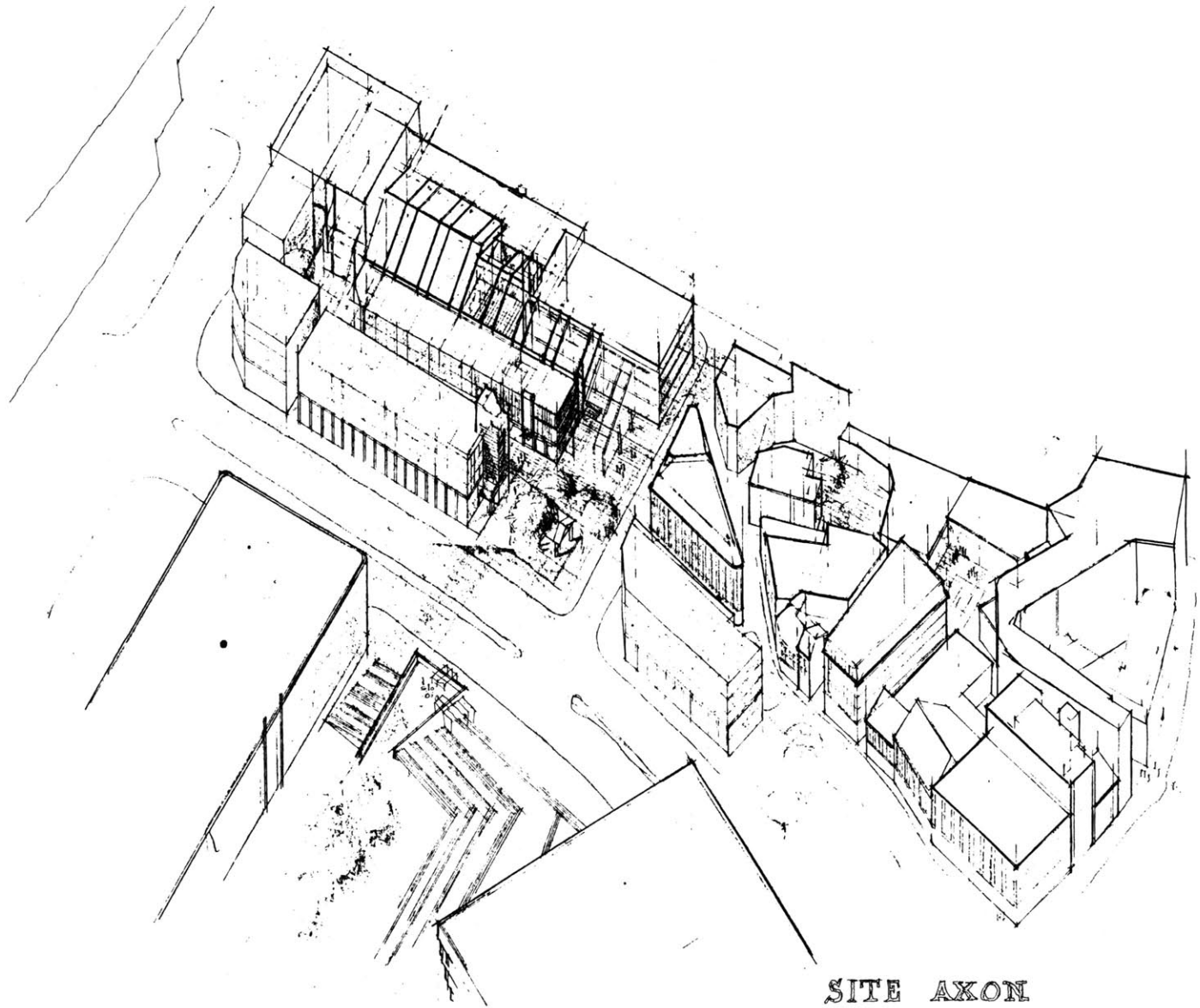
Organization of Levels



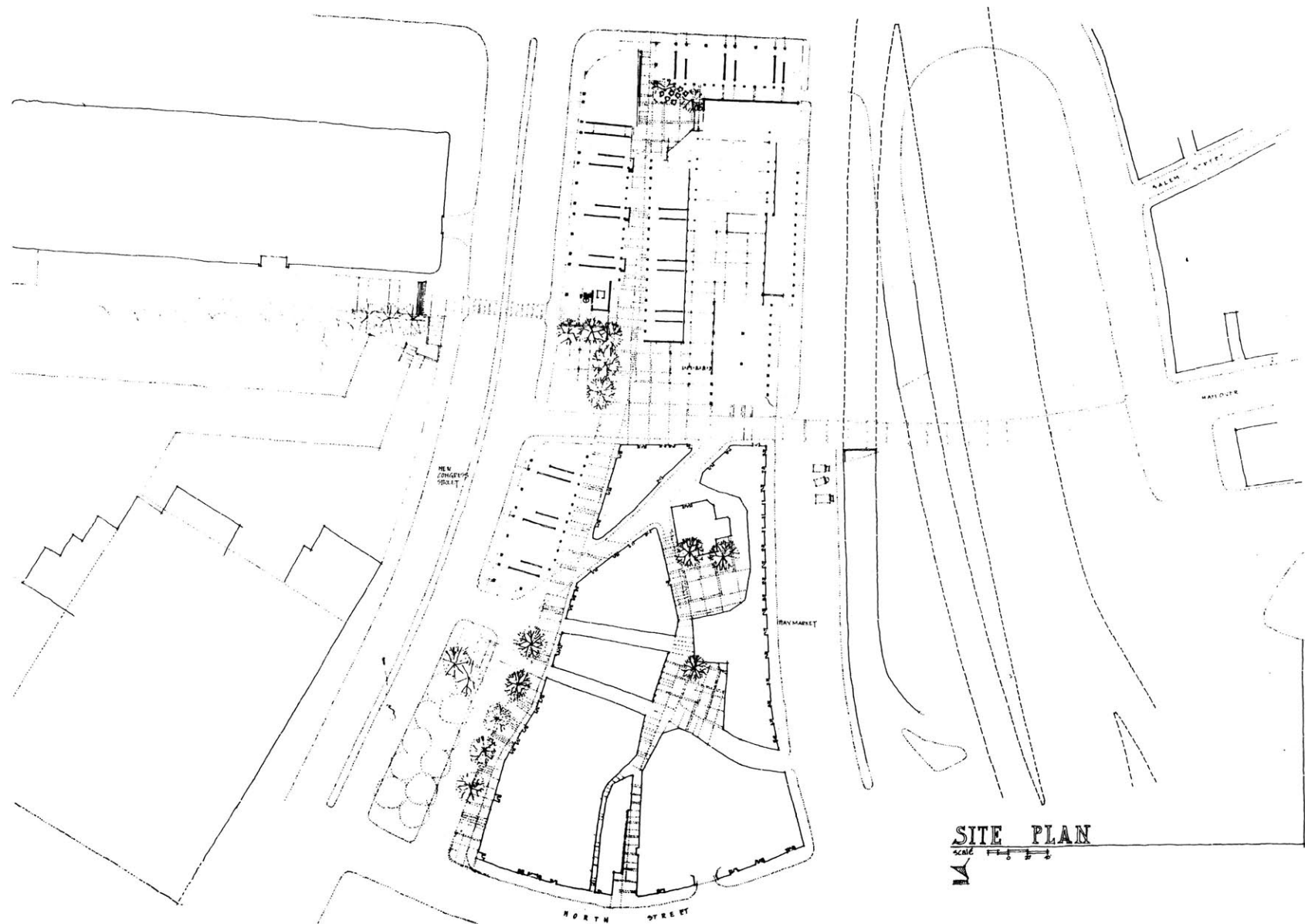
APPENDIX B

Design Proposal for Dock Square, Boston, Massachusetts,
Original Scheme, May 1983

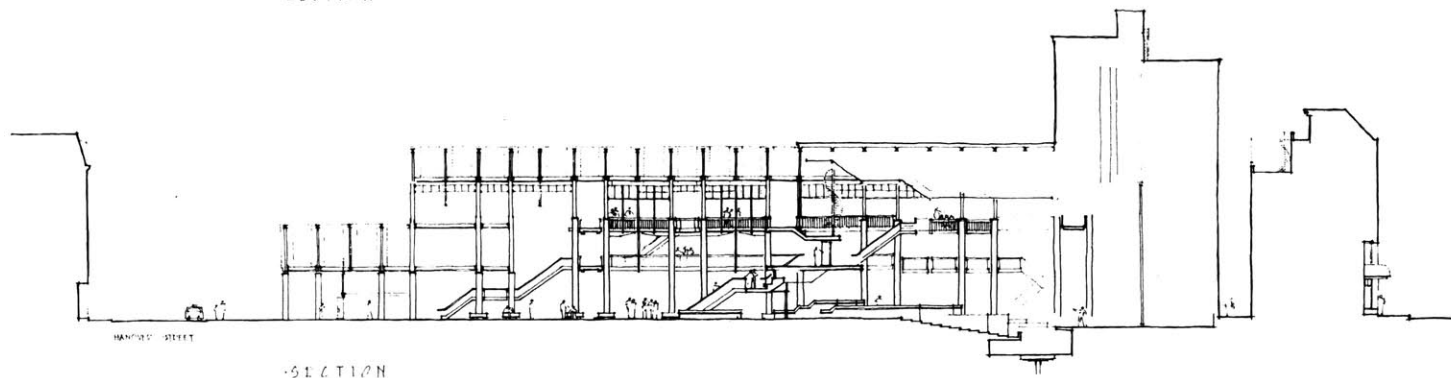
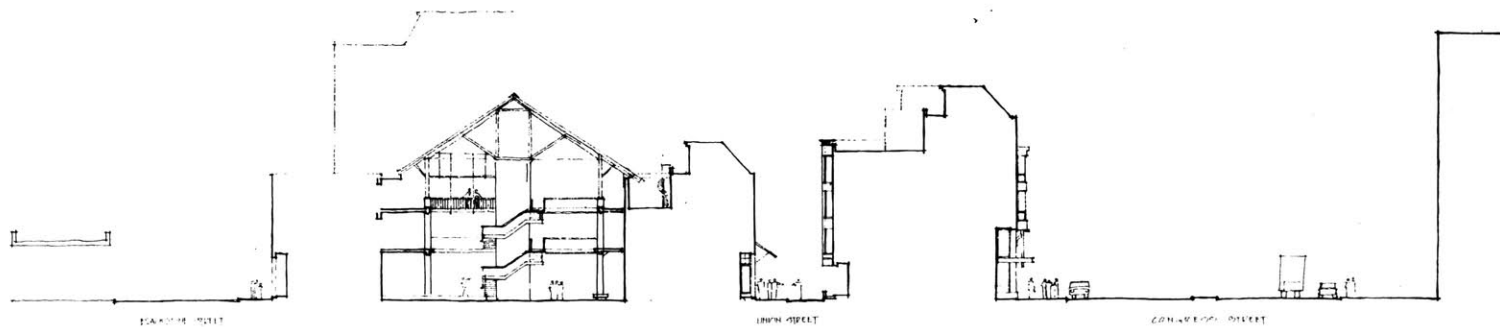




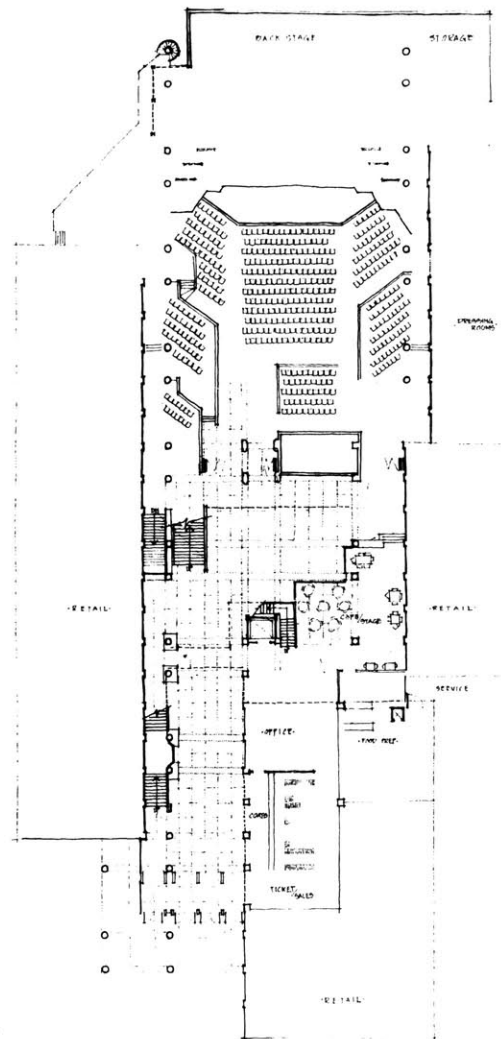
SITE AXON



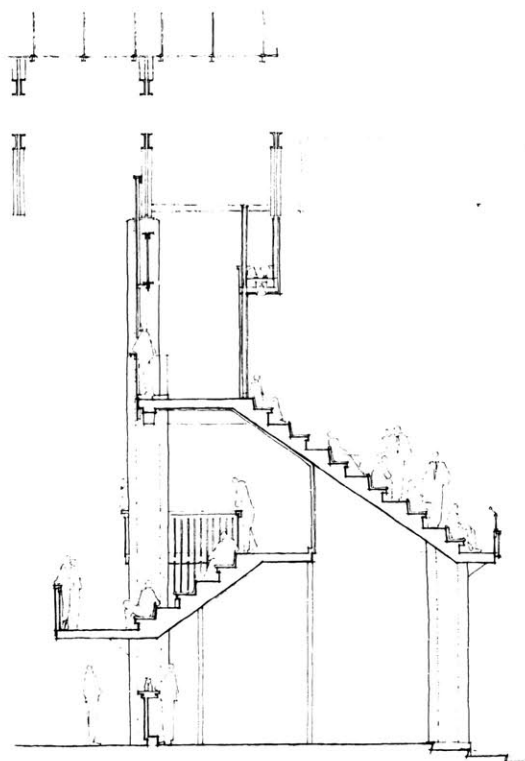
SITE PLAN
SCALE 1" = 100'



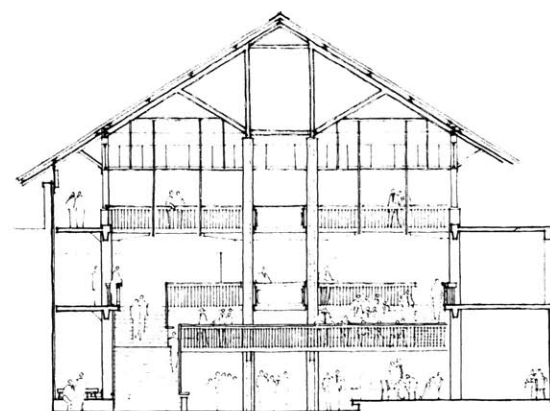
SITE SECTIONS
SCALE 1" = 10'



THEATER
STREET LEVEL
Scale 1/8" = 1'-0"



SECTION
THROUGH
HOUSE
SCALE 1/4" = 1'-0"



SECTION
THROUGH
HOUSE
SCALE 1/4" = 1'-0"

CREDITS

page 10. Genius Loci. Norberg-Schulz, p. 167.

11. Genius Loci. Norberg-Schulz, p.36.

Rooms With a View. Wise, p. 40.

Genius Loci. Norberg-Schulz, p. 121.

12. America's Forgotten Architecture. Wrenn and Mulloy, p. 32.

Five California Architects. McCoy, p. 158.

13. Rooms With a View. Wise, p. 78.

Modern Architecture 1851-1919. Frampton and Futagawa, p. 25.

Our Urban Legacy Medieval Towns. Moller, p. 33.

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